ORDER NO. KM40009703C1

F12

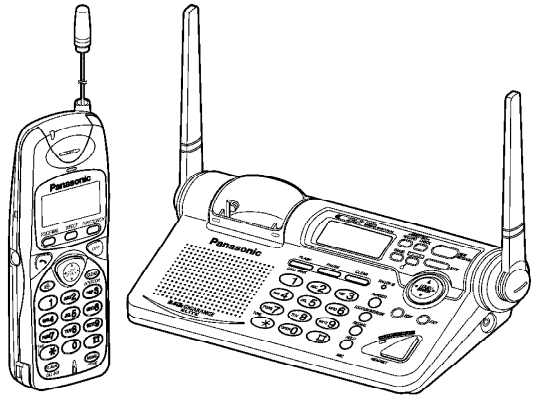
Service Manual

Telephone Equipment

Caller ID Compatible

KX-TG2670N

2.4GHz Digital Cordless Phone
Champagne gold Version
(for U.S.A.)



(Handset) (Base Unit)

SPECIFICATIONS

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	Base Unit	Handset
Power Source:	AC Adaptor (PQWATG2650N)	Rechargeable Ni-MH battery
Receiving Frequency:	24 channels within 2.4015~2.4705 GHz	24 channels within 2.4015~2.4705 GHz
Receiving Method:	Direct conversion	Direct conversion
Transmitting Frequency:	24 channels within 2.4015~2.4705 GHz	24 channels within 2.4015~2.4705 GHz
Oscillation Method:	PLL synthesizer	PLL synthesizer
Tolerance of OSC Frequency:	24 MHz ± 720 Hz	24 MHz ± 720 Hz
Modulation Method:	NA (FSK/SS)	NA (FSK/SS)
Spread spectrum Method:	Direct sequence	Direct sequence
Chip rate	15 chip	15 chip
ID Code:	22-bit	22-bit
Dial Mode:	Tone (DTMF)/Pulse	Tone (DTMF)/Pulse
Redial:	Up to 32 digits	Up to 32 digits
Speed Dialer:		Up to 48 digits
Power Consumption:		11 days at Standby, 4.5 hours at Talk (maximum)
Dimension (H × W × D):	$2^{11}/_{32}$" × $9^{5}/_{32}$" × 6" (60 × 233 × 153 mm)	$5^{25}/_{32}$" × $1^{31}/_{32}$" × $1^{13}/_{32}$" (147 × 50 × 36 mm)
Weight	0.99 lbs. (450 g)	0.37 lbs. (170 g)

Design and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

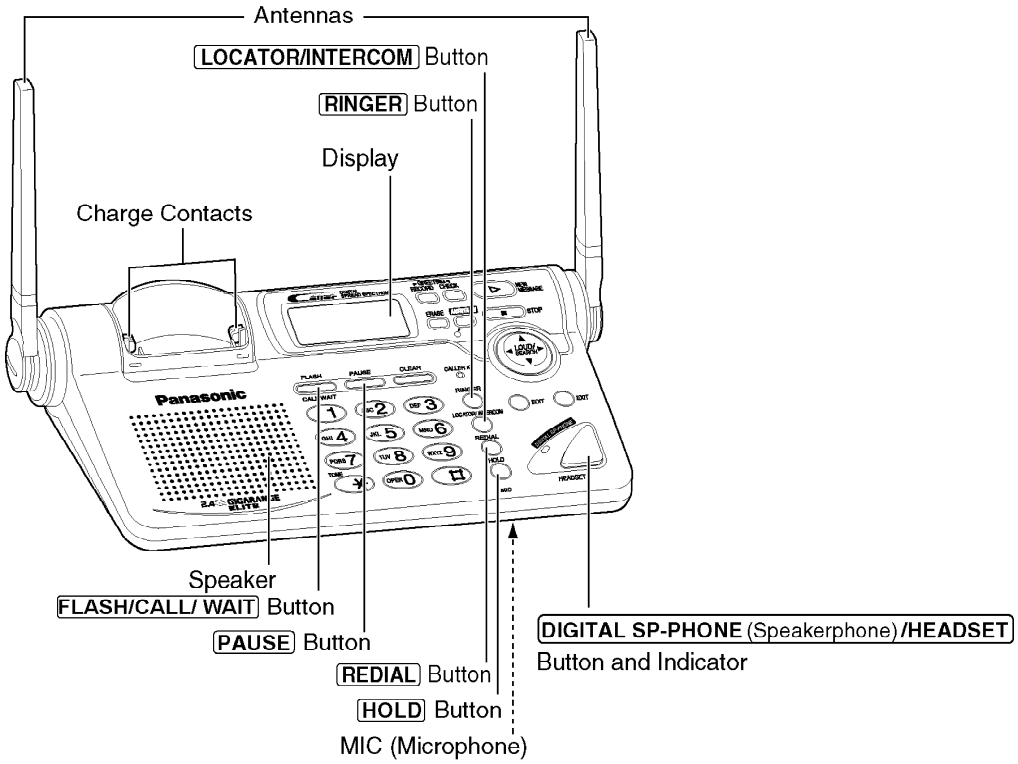
When you mention the serial number, write down all 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

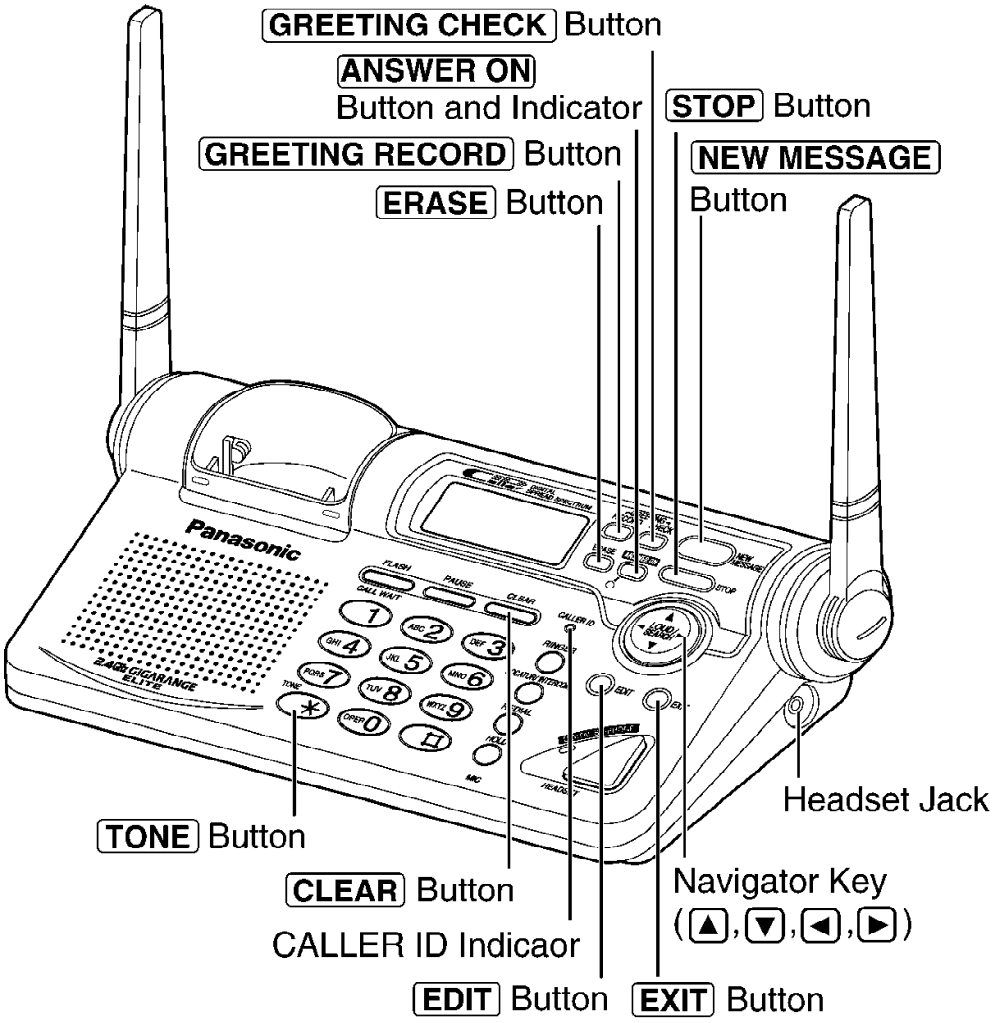
FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
When replacing, the following precautions will help prevent recurring malfunctions.
1. Cover the plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on the work table.
4. Do not grasp IC or LSI pins with bare fingers.

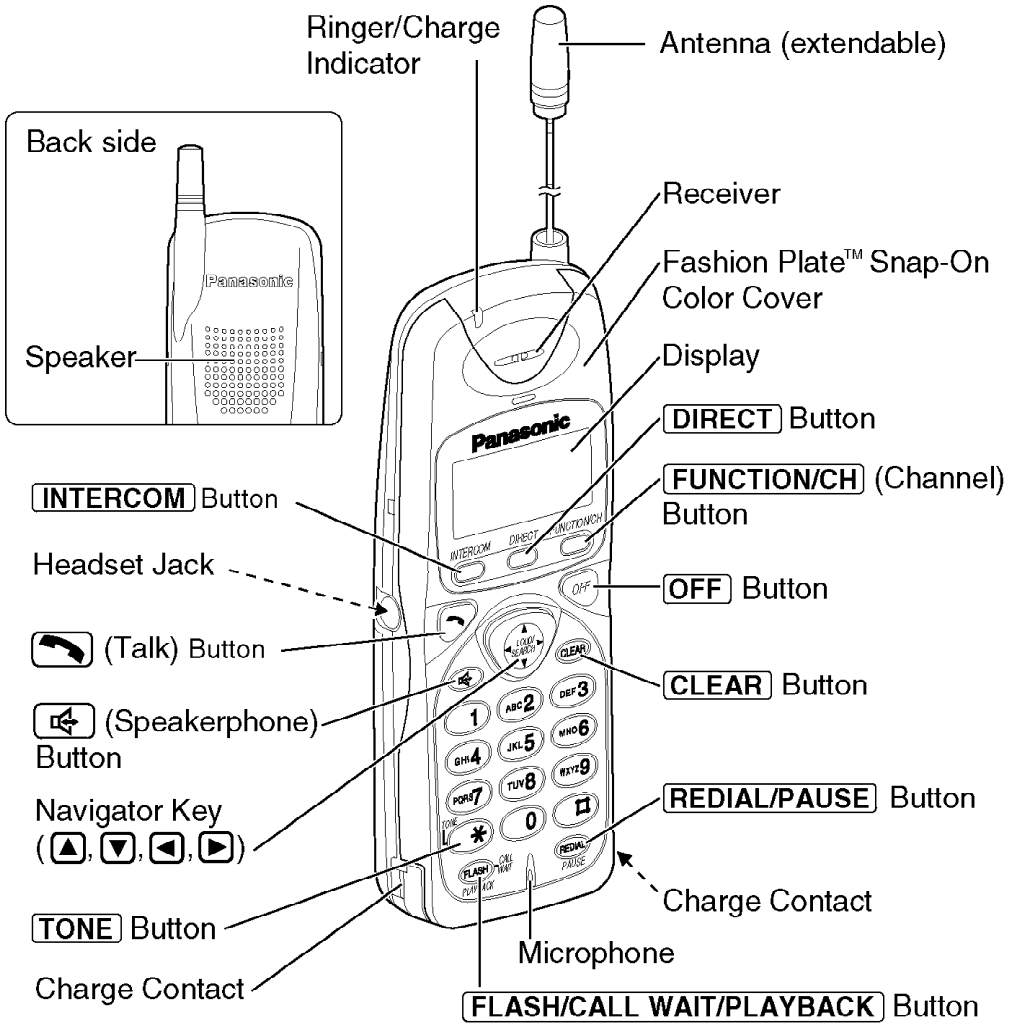
1. LOCATION OF CONTROLS

1.1. Base Unit



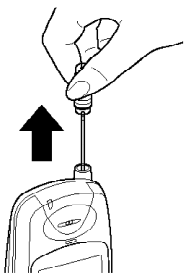

GREETING CHECK Button
ANSWER ON
Button and Indicator
STOP Button
GREETING RECORD Button
NEW MESSAGE
Button
ERASE Button
Panasonic
Headset Jack
TONE Button
CLEAR Button
Navigator Key
(▲,▼,◄,►)
CALLER ID Indicaor
EDIT Button
EXIT Button

1.2. Handset

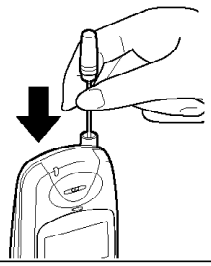


How to handle the handset antenna:

You can even use the handset without extending the antenna. But for best performance, extend the antenna fully until it locks into position.



To put away the antenna, slide down vertically holding the lower part until it stops.

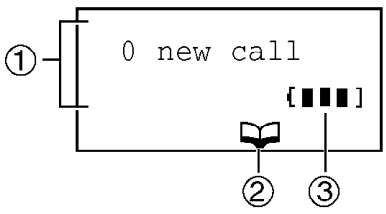


2. DISPLAYS

Both the handset and the base unit show you instructions and information on the displays. These display prompts are shown below.

2.1. Common prompts for the handset and the base unit

Handset



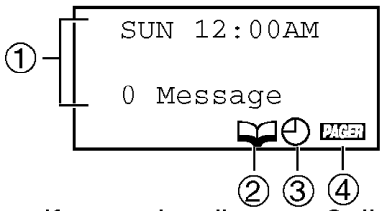
① The display shows the dialed number, call status, programming options and directory items etc. If you subscribe to a Caller ID service, caller information will be displayed. The number of new calls will be also displayed.

② The directory icon displays when storing or viewing the directory items.

③ The battery icon indicates the battery strength.

Standby mode:
While the handset is off the base unit, the display becomes blank after you finish using the handset (making/answering a call, viewing the Caller List or directory list etc.). The handset can receive calls. The battery life is conserved in this state. While the handset is on the base unit, the battery icon and the number of new Caller ID calls are displayed in the standby mode.

Base unit



① The day and time and the number of new incoming messages are displayed in the standby mode. The display shows the dialed number, call status, programming options and directory items etc.
If you subscribe to a Caller ID service, caller information will be displayed. The number of new calls will be also displayed.

② The directory icon displays when viewing the directory items.

③ The clock icon flashes with the day and time if the clock needs adjusting.

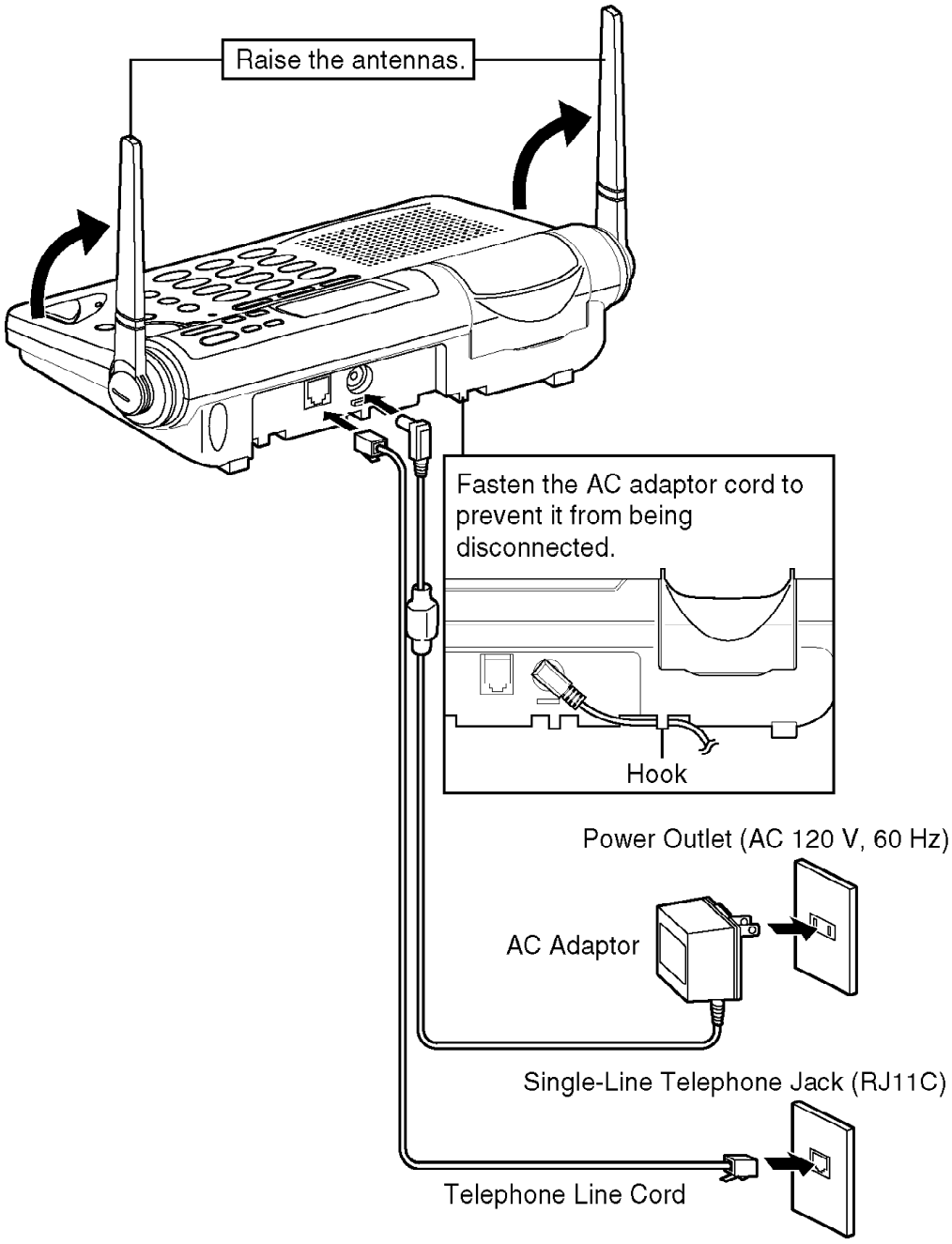
④ The pager icon indicates the pager mode is on.

Backlight LCD Displays

The handset and the base unit have the backlight LCD displays. Each display will light when you start using the handset or the base unit, and when a call is received. The handset display light will stay on for about 10 seconds after pressing a button or lifting the handset off the base unit. You can change the backlight color to orange for certain callers by storing them in the directory.

3. SETTINGS

3.1. Connections


Raise the antennas.
Fasten the AC adaptor cord to prevent it from being disconnected.
Hook
Power Outlet (AC 120 V, 60 Hz)
AC Adaptor
Single-Line Telephone Jack (RJ11C)
Telephone Line Cord

Note:

- USE ONLY WITH Panasonic AC ADAPTOR PQLV10 (Order No. PQWATG2650N).

- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)

- If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.

3.2. Battery Charge

3.2.1. Battery strength

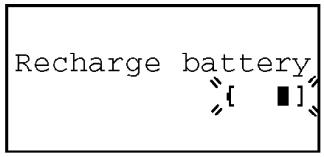
You can check the battery strength on the handset display while the handset is on the base unit, while it is in use (making/answering a call etc.), or after viewing the Caller List or directory items, programming etc. The battery strength will remain for 5 seconds after using the handset, then the display will return to the standby mode.

The battery strength is as shown in the chart below.

Display prompt	Battery strength
[▮▮▮]	High
[▮▮]	Medium
[▮]	Low
[▮] (flashing)	Needs to be recharged.

- If the battery has been fully charged, the ringer/charge indicator will light in green.

3.2.2. Recharge



Recharge the battery when:
– "Recharge battery" is displayed on the handset,
– "[▮]" flashes on the display, or
–the handset beeps intermittently while it is in use.

- If you DO NOT recharge the handset battery for more than 15 minutes, the display will keep indicating "Recharge battery" and/or "[▮]" will continue to flash.

3.2.3. Battery information

After your Panasonic battery is fully charged:

Operation		Approx. battery life
While in use (TALK)	near the base unit*	Up to 4.5 hours
	away from the base unit	Up to 3.5 hours
While not in use (Standby)		Up to 11 days

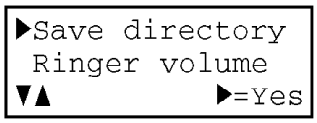
* Within about 10 feet (3 m)

- Battery life may be shortened depending on usage conditions, such as viewing the Caller ID Caller List or directory list, and ambient temperature.
- **Clean the handset and the base unit charge contacts with a soft, dry cloth once a month. Clean more often if the unit is subject to grease, dust or** Otherwise the battery may not charge properly.
- If the battery is fully charged, you do not have to place the handset on the base unit until "Recharge battery" is displayed and/or "[▮]" flashes. This will maximize the battery life.
- The battery cannot be overcharged.

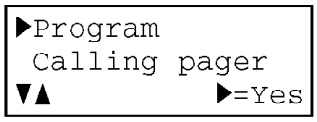
3.3. Selecting the Dialing Mode

You can program the dialing mode **using the handset near the base unit**.
If you have touch tone service, set to "Tone". If rotary or pulse service is used, set to "Pulse". Your phone comes from the factory set to "Tone".
Make sure the unit is in the standby mode initially.

1 Press [FUNCTION/CH].



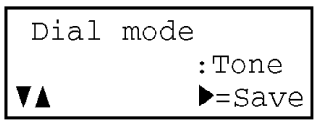
2 Press [▼] or [▲] repeatedly until the arrow points to "Program".



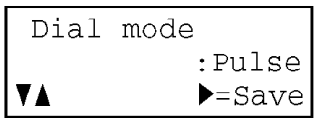
3 Press [▶] (Yes key).

4 Press [▼] or [▲] repeatedly until the arrow points to "Set dial mode".

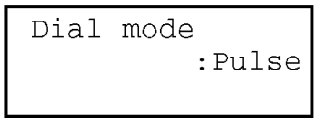
5 Press [▶] (Yes key).



6 Press [▼] or [▲] to select "Pulse" or "Tone".



7 Press [▶] (Save key).
- A beep sounds.
- To return to the standby mode, press [OFF].

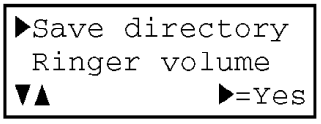


- You can exit the programming mode any time by pressing [OFF].
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

3.4. Selecting the Line Mode

If the line is connected to a low voltage system such as a PBX, set to "B". Otherwise the Call Waiting Caller ID Feature may not be used, and the unit may not alert your pager. Your phone comes from the factory set to "A". **Use the handset near the base unit.**
Make sure the unit is in the standby mode initially.

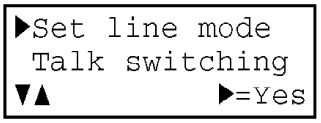
1 Press FUNCTION/CH.



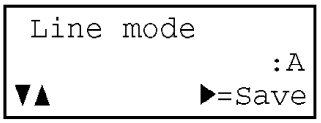
2 Press ▼ or ▲ repeatedly until the arrow points to "Program".

3 Press ▶ (Yes key).

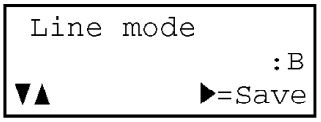
4 Press ▼ or ▲ repeatedly until the arrow points to "Set line mode".



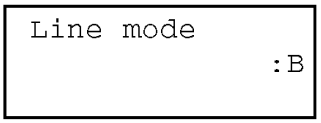
5 Press ▶ (Yes key).



6 Press ▼ or ▲ to select "B" or "A".



7 Press ▶ (Save key).
- A beep sounds.
- To return to the standby mode, press OFF.



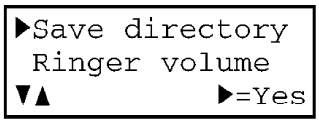
- You can exit the programming mode any time by pressing OFF.
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

4. PREPARING THE ANSWERING SYSTEM

4.1. Day and Time Adjustment

Voice Time/Day Stamp: During playback, a synthesized voice will announce the time and day that each message was recorded.

1 Press FUNCTION/CH .

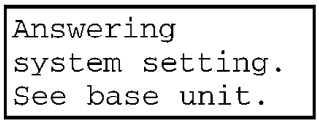


2 Press ▼ or ▲ repeatedly until the arrow points to "Program".

3 Press ▶ (Yes key).

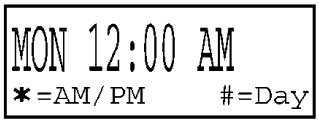
4 Press ▼ or ▲ repeatedly until the arrow points to "TAD program".

5 Press ▶ (Yes key).
- The base unit display shows programming options.



6 Press 0.
- "Set time" is announced.
  If previously adjusted, the day/time will be heard.

Base unit display



7 Enter the time (hour and minute) using a 4-digit number.
(Ex. To set 9:30, enter "0930".)

8 Press * to select "AM" or "PM".
Press # repeatedly to set the day.

9 Press ▶ (Save key).
- The unit announces the day/time. The clock starts working.
- If 6 beeps sound, the setting is not correct. Start again from step 4.
- To return to the standby mode, press OFF.

- In step 7, you cannot enter numbers greater than 12. **Do not use military time.** (To set 13:00 hours, enter "0100", and select "PM" by pressing *.)

If a power failure occurs, the adjusted time/day will be erased. Readjust the day/time.

For Caller ID service users

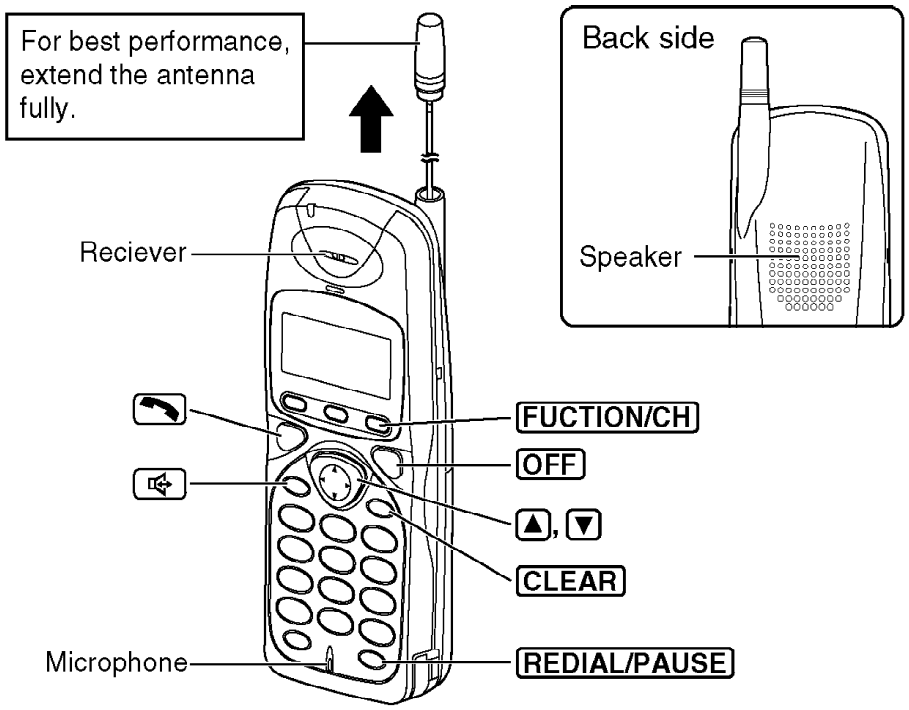
For Caller ID service users

- The Caller ID information will re-set the clock after the first ring if the adjusted time is incorrect. However, the day will not be re-set.
- If the time has not previously been set, the Caller ID information will not adjust the clock.
- The Caller ID information will automatically adjust the clock for daylight saving time.

5. OPERATION

5.1. Making Calls

5.1.1. With the Handset



1 Press .

```
Talk
```

2 Dial a phone number.

- The dialed number is displayed.
- After a few seconds, the display will show the length of the call and the battery strength.

```
Talk
1112222
```

```
Talk

00-00-00      [■■■]
```

3 To hang up, press OFF or place the handset on the base unit.

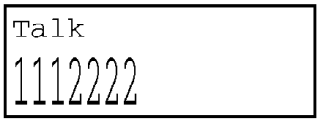
```
off

00-01-08      [■■■]
```

- If the handset has lost communication with the base unit in step 1, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

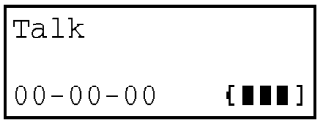
To have a hands-free phone conversation (Using Digital Duplex Speakerphone)

1 Press [ ].
- The button lights.

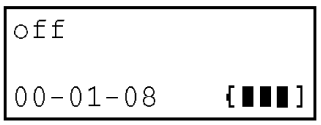
2 Dial a phone number.
- The dialed number is displayed.
- After a few seconds, the display will show the length of the call and the battery strength.



3 When the other party answers, talk into the microphone.



4 To hang up, press [OFF] or place the handset on the base unit.
- The [ ] button light goes out.



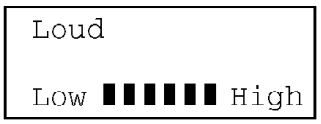
- If the handset has lost communication with the base unit, 3 beeps sound and "No link to base. Place on cradle and try again." is displayed.

Hands-free Digital Duplex Speakerphone
For best performance, please note the following:
- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press [▼] to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press [▼] to decrease the speaker volume.
- While talking using [ ], you can switch to the hands-free phone conversation by pressing [ ]. To switch back to the receiver, press [ ].

To adjust the receiver volume (High, Medium or Low) or speaker volume (6 levels) while talking

To increase, press [▲].
To decrease press [▼].
- Each time you press [▼] or [▲], the volume level will change.
- The display will return to the length of the call.

Ex. Receiver volume: High
Speaker volume: level 6



If noise interferes with the conversation

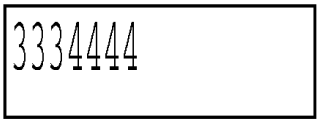
Extend the antenna fully, press [FUNCTION/CH] to select a clearer channel or move closer to the base unit.

To redial the last number dialed on the handset

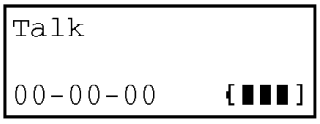
Press [ ] or [ ] and press [REDIAL/PAUSE].

To dial after confirming the entered number

1 Dial a phone number.
- If you misdial, press [CLEAR] and dial again.



2 Press [ ].
OR
To have a hands-free phone conversation, press [ ], and when the other party answers talk into the microphone.
- After a few seconds, the display will show the length of the call and the battery strength.



3 To hang up, press [OFF] or place the handset on the base unit.

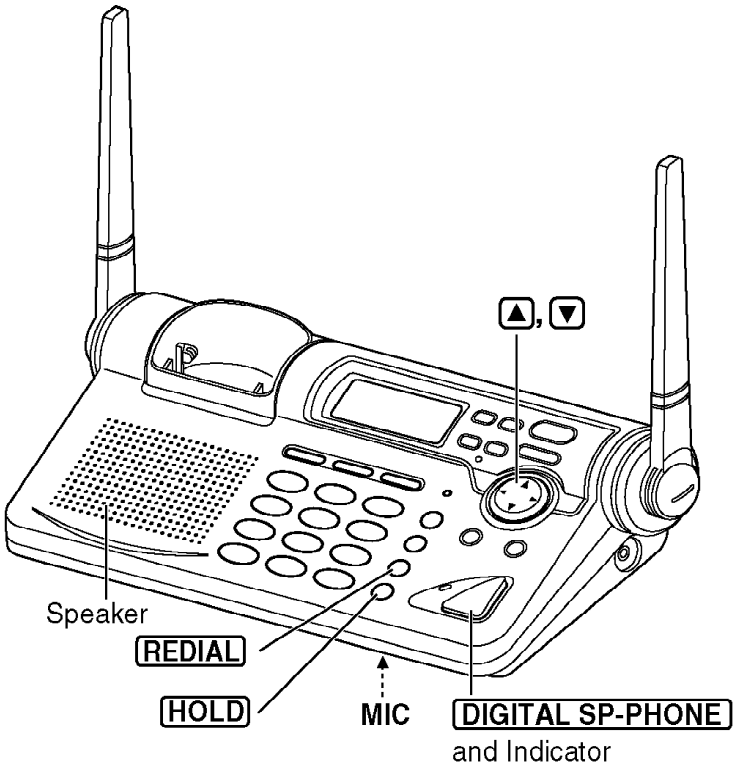
To redial after confirming the last number dialed

Press [REDIAL/PAUSE] and press [ ] or [ ].

Lighted handset keypad

The handset dialing buttons will light when you press a button or lift the handset off the base unit, and flash when a call is received. The lights will go out about 10 seconds after pressing a button, lifting the handset or answering a call.

5.1.2. With the Base Unit (Digital Duplex Sperkerphone)



1 Press **DIGITAL SP-PHONE**.
- The DIGITAL SP-PHONE indicator lights.

Talk

2 Dial a telephone number.

Talk
1112222

3 When the other party answers, talk into the **MIC** (microphone).

Talk
00-00-00

4 To hang up, press **DIGITAL SP-PHONE**.
- The indicator light goes out.

off
00-00-00

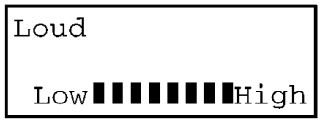
- To switch to the handset while using the base unit speakerphone:
  - If the handset is off the base unit, press [ ] or [ ].
  - If on the base unit, just lift up.
- During a call using the handset, the call can be switched to the base unit speakerphone by pressing **DIGITAL SP-PHONE** on the base unit.

Hands-free Digital Duplex Speakerphone
For best performance, please note the following:
- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press ▲ to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press ▼ to decrease the speaker volume.

To adjust the speaker volume (8 levels) while talking

To increase, press ▲.
To decrease, press ▼.

Ex. Level 8



To redial the last number dialed on the base unit

Press **DIGITAL SP-PHONE** and press **REDIAL**.

To put a call on hold

Press **HOLD**.

- The DIGITAL SP-PHONE indicator flashes.

To release the hold

From the base unit, press **DIGITAL SP-PHONE**.

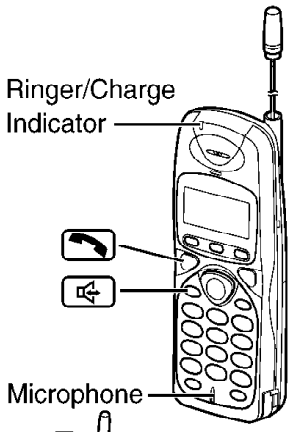
From the handset, press or , or lift the handset off the base unit.

- If another phone is connected on the same line, you can also release the hold by lifting its handset.

5.2. Answering Calls

When a call is received, the unit rings, "Incoming call" is displayed and the ringer/charge indicator flashes.
If you subscribe to a Caller ID service, the calling party information will be displayed after the first ring. In order to view the Caller ID information, please wait until the second ring to answer a call.

With the Handset

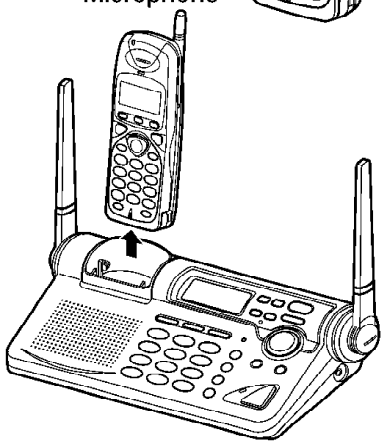


If the handset is off the base unit;
Press [phone].

•You can also answer a call by pressing any dialing button [0] to [9], [*] or [#] (— **Any Key Talk**).
OR
Press [speaker], and when the other party answers talk into the microphone.

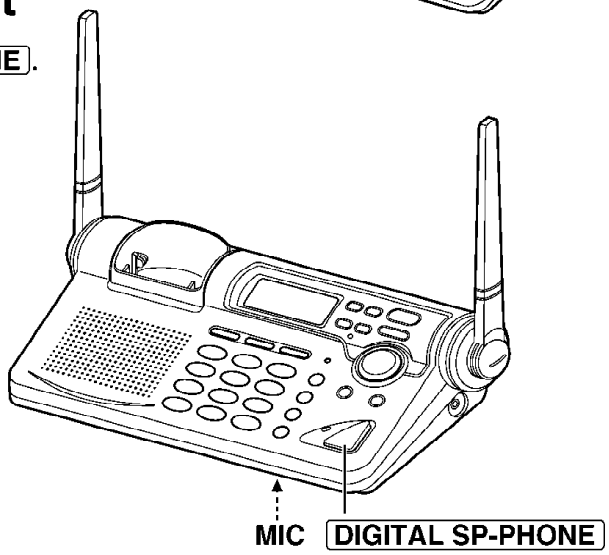
Auto Talk

If you set the Auto Talk feature to ON, you can answer a call by lifting the handset off the base unit without pressing [phone] or [speaker].



With the Base Unit

1. Press **DIGITAL SP-PHONE**.
2. Talk into the **MIC**.
3. To hang up, press **DIGITAL SP-PHONE**.



5.3. Flash Button

Pressing [FLASH/CALL WAIT/PLAYBACK] or [FLASH/CALL WAIT] allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

Selecting the flash time

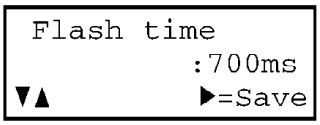
The flash time depends on your telephone exchange or host PBX. You can select the following flash times: "700, 600, 400, 300, 250, 110, 100 or 90 ms (milliseconds)". Your phone comes from the factory set to "700 ms". **Make sure the unit is in the standby mode initially.**

1 Press [FUNCTION/CH].

2 Press [▼] or [▲] repeatedly until the arrow points to "Program", and press [▶] (Yes key).

3 Press [▼] or [▲] repeatedly until the arrow points to "Set flash time", and press [▶] (Yes key).

4 Press [▼] or [▲] repeatedly until the desired time is displayed, and press [▶] (Save key).
- A beep sounds.
- To return to the standby mode, press [OFF].



- You can exit the programming mode any time by pressing [OFF].
- If you are connected via a PBX, a longer flash time may be necessary to use PBX functions (transferring a call etc.). Consult your PBX supplier for the correct setting.

5.4. Listening to Message

You can see the total number of recorded messages on the base unit display. If the ANSWER ON indicator flashes, new messages have been recorded.

Listening to only new messages

Press [NEW MESSAGE] briefly.

- The unit announces the number of new messages and plays them back.

Listening to all recorded messages

Press and hold [NEW MESSAGE] until playback starts.

To adjust the speaker volume:
9 levels (0-8) are available while using the answering system. To increase, press [▲]. To decrease, press [▼].

- During each message playback, the message number is displayed. (Ex. While the first message is being played back, "Message 1" is displayed.)
- At the end of the last message, "End of final message" is heard. The unit will announce the remaining recording time if it is less than 5 minutes.

During playback

To **repeat** message	**To repeat from the beginning of the message** Press [◀]. •If you press within 5 seconds of playback, the previous message will be played.
To **skip** message	**To skip to the next message** Press [▶].
To **stop** operation	Press [STOP]. •To resume playback, press [NEW MESSAGE]. •If you do not press any button for 60 seconds or if you press [STOP] again, the unit will return to the standby mode.

For Caller ID service users

During playback, the base unit display will show the name and/or number of the caller whose message is being played.

```
JACK SMITH
1-222-333-4444
 - Message 3 -
```

To call back the displayed number:
During playback, press [DIGITAL SP-PHONE].
•The unit stops playback and automatically dials the displayed phone number.

•After listening to new incoming messages, "√" will be added to the call entries in the Caller ID Caller List.

From the Handset

If someone else is in the room and you want to listen to the recorded messages privately, you can use the handset.

1 Handset:
Press [FLASH/CALL WAIT/PLAYBACK].
•The number of new messages is heard on the handset.

2 Base unit:
To listen to new messages, press [NEW MESSAGE] briefly. To listen to all messages, press and hold [NEW MESSAGE] until playback starts.
•The messages will be heard on the handset.
•[◀], [▶] and [STOP] can also be used during playback.

3 When finished, press [FLASH/CALL WAIT/PLAYBACK] or place the handset on the base unit.

5.5. Caller ID Service

This unit is compatible with a Caller ID service offered by your telephone company. If you subscribe to a Caller ID service, the calling party's information will be shown on the handset and base unit displays after the first ring.
The unit can record information of up to 50 different callers in the Caller List. The Caller List information is sorted by the most recent to the oldest call. When the 51st call is received, the first call is deleted.
Using the list, you can automatically call back a caller. You can store the caller's names and numbers from the Caller List into the directory.

If you subscribe to both Caller ID and Call Waiting services, when a second call is received while talking, the new caller's name and phone number will be displayed.

5.5.1. How caller information is displayed when a call is received

The handset and base unit displays show the caller's name and number after the rst ring.

- After you answer the call, the display will show the length of the call.

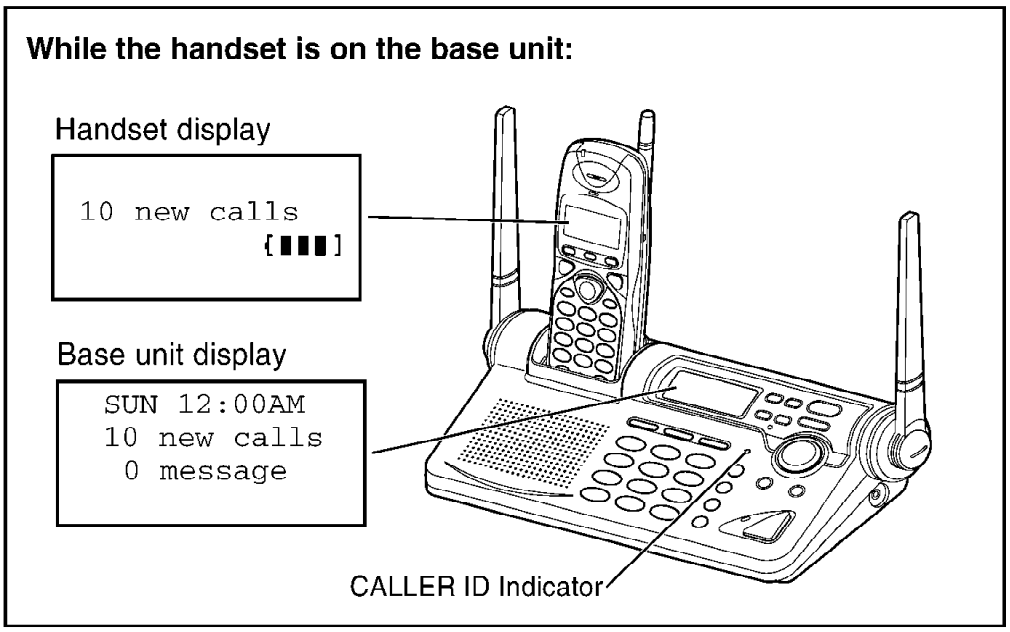
- Caller information cannot be displayed in the following cases:
  - —If the caller dialed from an area which does not provide a Caller ID service, the display will show "Out of area".
  - —If the caller has requested not to display his/her information, the display will show "Private caller".
- If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.
- The name display service may not be available in some areas. For further information, please contact your telephone company.

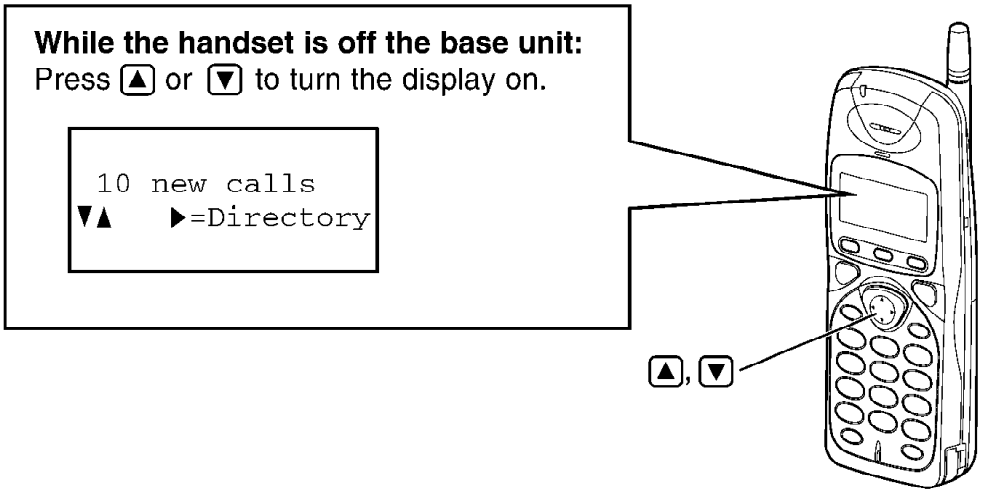
Call group feature (Dual-Color Visual Ringer):
If you receive a caller ID call from one of the phone numbers stored in the directory and the item has set the feature;
– the handset and base unit will ring with a different ringer pattern,
– the handset and base unit displays will light in orange, and
– the ringer/charge indicator will ash in orange.
You can then distinguish the caller from others easily. To use this feature, store items in the directory and turn the feature on for required items.

5.5.2. To check the number of new calls

When new calls have been received, the CALLER ID indicator ashes on the base unit. The handset and base unit displays show the number of new calls.

Ex. You have received 10 new calls.





•If "No items stored" is displayed, the Caller List is empty.

5.5.3. Viewing the caller list

You can view the caller list with the handset or the base unit. Caller List information includes the caller's name and phone number, the time and date the call was received, and the number of times that caller called.
Make sure the unit is in the standby mode initially.

With the handset

1 Press ▼ or ▲ to enter the Caller List.

- The display will show, for example, the following.

```
  2 new calls
▼▲   ▶=Directory
```

- You can go to the directory list by pressing ▶.

2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.

- To scroll between callers, press ▼ or ▲.

```
JACK SMITH
1-222-333-4444
 3:10P JUN.10
```

3 To exit the list, press **OFF**.

- The handset will return to the standby mode.

With the base unit

1 Press ▼ or ▲ to enter the Caller List.

- The display will show, for example, the following.

```
  2 new calls
▼▲   ▶=Directory
```

- You can go to the directory list by pressing ▶.

2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.

- To scroll between callers, press ▼ or ▲.

```
JACK SMITH
1-222-333-4444
 3:10P JUN.10
```

3 To exit the list, press **EXIT** or **STOP**.

- The base unit will return to the standby mode.

- If "No items stored" is displayed, the Caller List is empty.
- If there is no name information for a caller, the display will only show the phone number.
- While you are viewing the Caller List with the handset, another person cannot access the list using the base unit, and vice versa.

What "√" means

When the display shows "√", you have already viewed this calling information, answered the call, called back the caller or played back the message. If the same caller calls again, the call entry with "√" will be replaced with the new call entry.

```
JACK SMITH
1-222-333-4444
 3:10P JUN.10 √
```

If a caller calls more than once

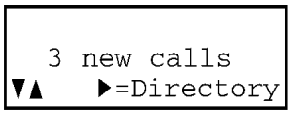
The number of times the same caller called is displayed (×2 to ×9). The date and time of the most recent call will be recorded. After checking, ×2 to ×9 will be replaced with "√".

```
JACK SMITH
1-222-333-4444
 3:10P JUN.10 ×3
```

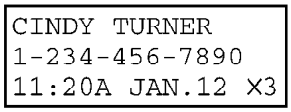
5.5.4. Calling back from the caller list

With the handset

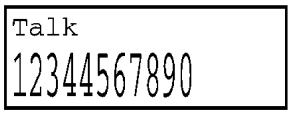
1 Press ▼ or ▲ to enter the Caller List.



2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.



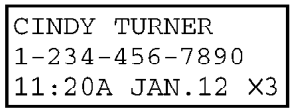
3 Press or .
•The displayed phone number is dialed automatically.



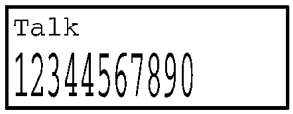
With the base unit

1 Press ▼ or ▲ to enter the Caller List.

2 To search from the most recent call, press ▼.
To search from the oldest call, press ▲.



3 Press **DIGITAL SP-PHONE**.
•The displayed phone number is dialed automatically.



•In some cases, you may have to edit the number before dialing. (Ex. You may have to delete "1" and the area code.)
•If a phone number is not displayed in the caller information, you cannot call back that caller.

5.5.5. Editing the caller's phone number

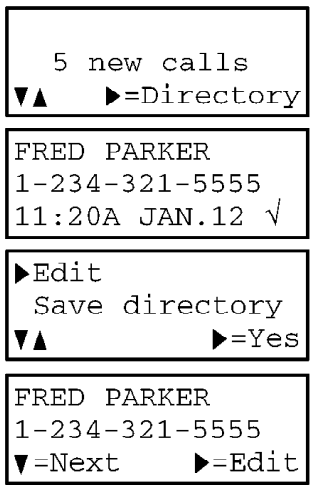
You can edit a phone number into one of 4 patterns using the handset or the base unit.
Make sure the unit is in the standby mode initially.

5.5.5.1. With the handset

1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to nd the desired caller, and press ▶.

3 While the arrow points to "Edit", press ▶ (Yes key).



4 Press ▶ (Edit key) to select a pattern.

•Each time you press ▶, the number is rearranged into one of 4 different patterns.

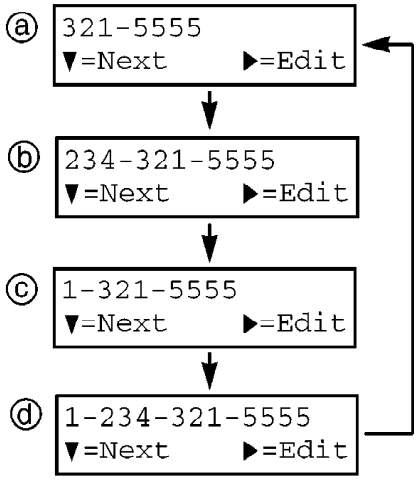
ⓐ [Phone no.]

ⓑ [Area code] – [Phone no.]

ⓒ 1 – [Phone no.]

ⓓ 1 – [Area code] – [Phone no.]

•The order in which patterns ⓐ – ⓓ are displayed depends on how the telephone number is displayed in step 3.



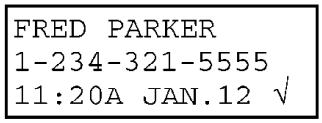
5 After editing the number, you can continue with calling back or storing procedures. To call back, press [phone] or [speaker] .
To store the number in the directory, press ▼ (Next key), and follow the instructions on the display.

•The number edited in step 4 will not be maintained in the Caller List.

5.5.5.2. With the base unit

1 Press ▼ or ▲ to enter the Caller List.

2 Press ▼ or ▲ repeatedly to nd the desired caller.



3 Press **EDIT** to select a pattern.

•Each time you press **EDIT**, the number is rearranged into one of 4 different patterns.

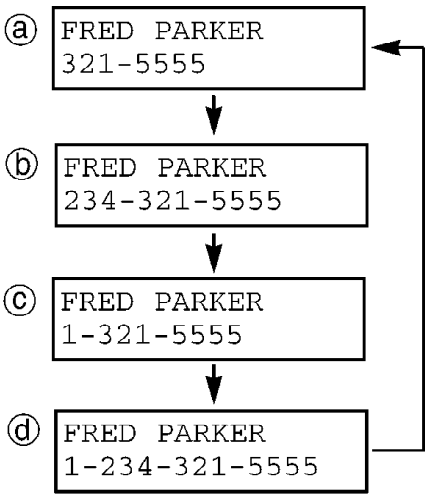
ⓐ Phone no.

ⓑ Area code – Phone no.

ⓒ 1 – Phone no.

ⓓ 1 – Area code – Phone no.

•The order in which patterns ⓐ–ⓓ are displayed depends on how the telephone number is displayed in step 2.



4 After editing the number, you can continue with calling back. Press **DIGITAL SP-PHONE**.

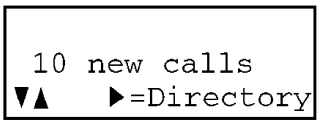
•The number edited in step 3 will not be maintained in the Caller List.

5.5.6. Storing caller list information is the directory

You can store names and phone numbers that are in the Caller List into the directory. You can also turn the call group feature on for certain callers.

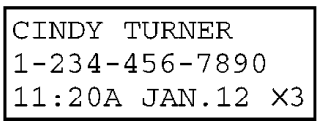
Storing must be carried out with the handset.
Make sure the unit is in the standby mode initially.

1 Press ▼ or ▲ to enter the Caller List.



2 Press ▼ or ▲ repeatedly to nd the caller you want to store in the directory, and press ▶ (Yes key).

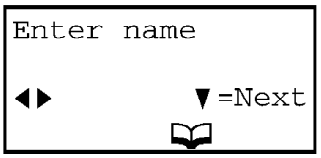
•If the number requires editing.

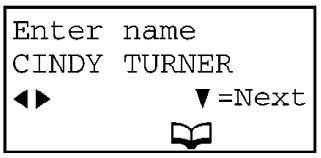


3 Press ▼ or ▲ to select "Save directory", and press ▶ (Yes key).

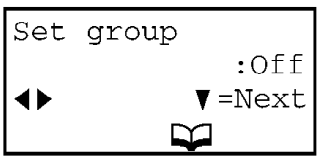
If there is no name information for the caller, "Enter name" will be displayed.

a) If a name is not required, press ▼ (Next key) twice.
b) If a name is required, enter the name. When nished, press ▼ (Next key) twice.





4 To turn the call group feature on, select "On" by pressing ◀ or ▶.
If not required, select "Off".



•You can exit the programming mode any time by pressing OFF.
•If the display shows "Directory full" in step 3, press OFF to exit the list.
•You cannot store caller information in the directory if a phone number is not displayed.
•If 3 beeps sound and the display shows "Save error", move closer to the base unit and start again from step 1.

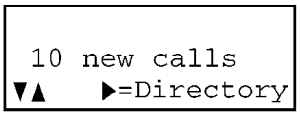
5.5.7. Erasing caller list information

After checking the Caller List, you can erase some or all of the entries with the handset or the base unit.
Make sure the unit is in the standby mode initially.

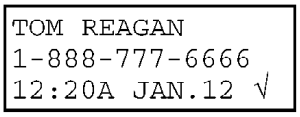
To erase a specic caller from the Caller List

With the handset/base unit:

1 Press ▼ or ▲ to enter the Caller List.



2 Press ▼ or ▲ repeatedly to find the caller you want to erase from the Caller List.



3 Press **CLEAR**.

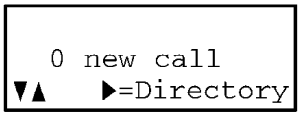
- A beep sounds and the information is erased.
- To erase other items, repeat from step 2.
- To return to the standby mode, if using the handset, press **OFF**. If using the base unit, press **EXIT** or **STOP**.

To erase all entries in the Caller List

Before erasing all entries, make sure that "0 new call" is displayed.

With the handset/base unit:

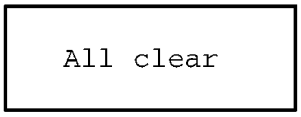
1 Press ▼ or ▲ to enter the Caller List.



2 Press **CLEAR**.

3 Press ▼ or ▲ to select "All clear".

4 Press ▶ (Yes key) or **CLEAR**.



- A beep sounds and all entries are erased.

6. DISASSEMBLY INSTRUCTIONS

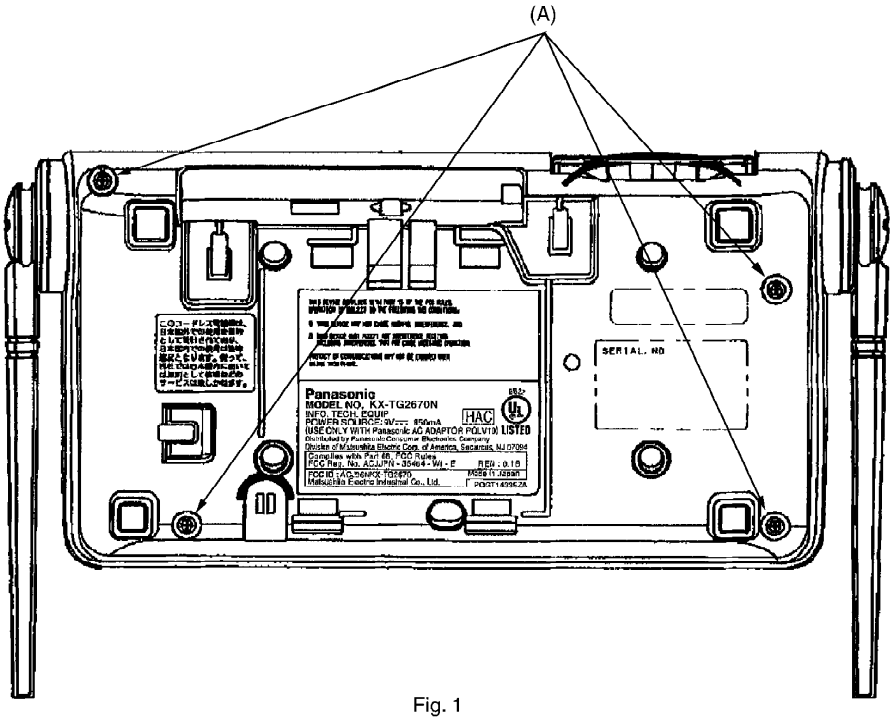

(A)
Panasonic
MODEL NO. KX-TG2670N
SERIAL NO

Fig. 1

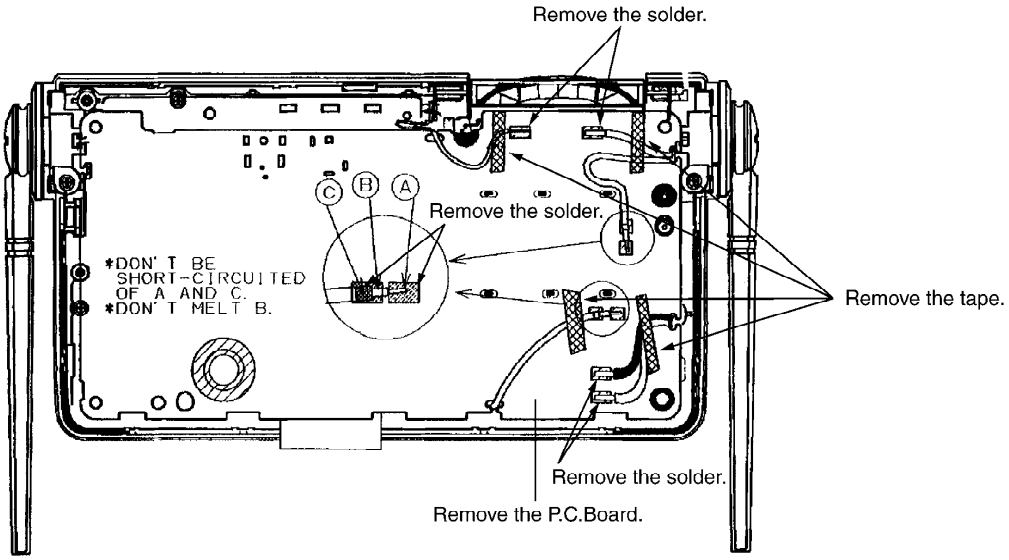

Remove the solder.
C
B
A
Remove the solder.
*DON' T BE
SHORT-CIRCUITED
OF A AND C.
*DON' T MELT B.
Remove the tape.
Remove the solder.
Remove the P.C.Board.

Fig. 2

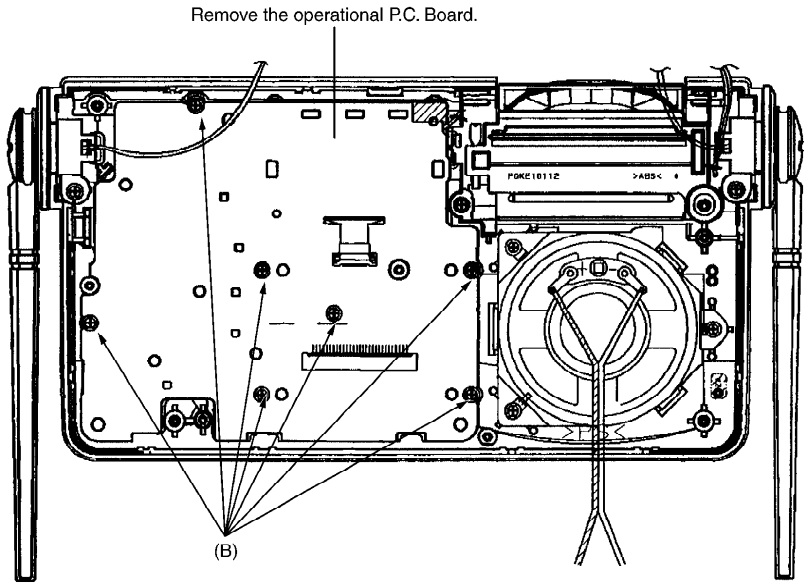


Fig. 3

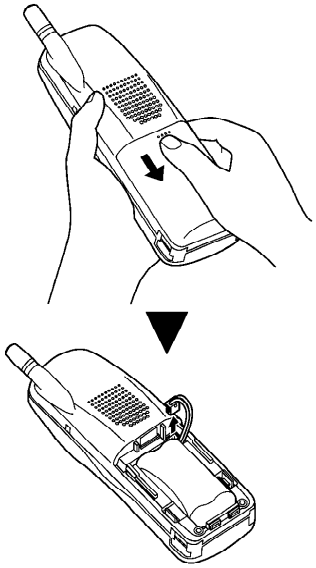


Fig. 4

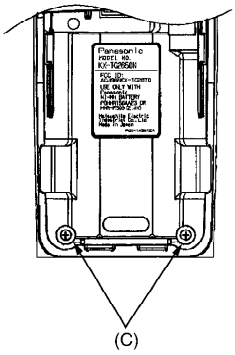


Fig. 5

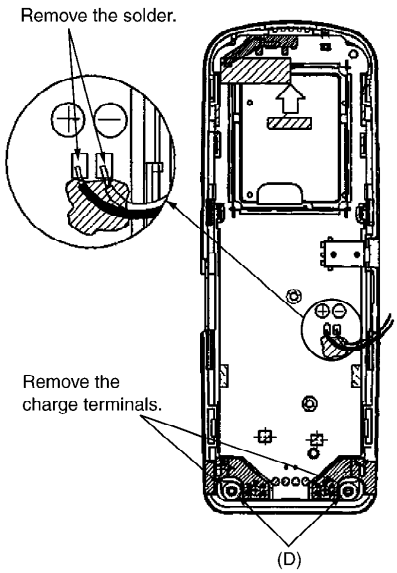
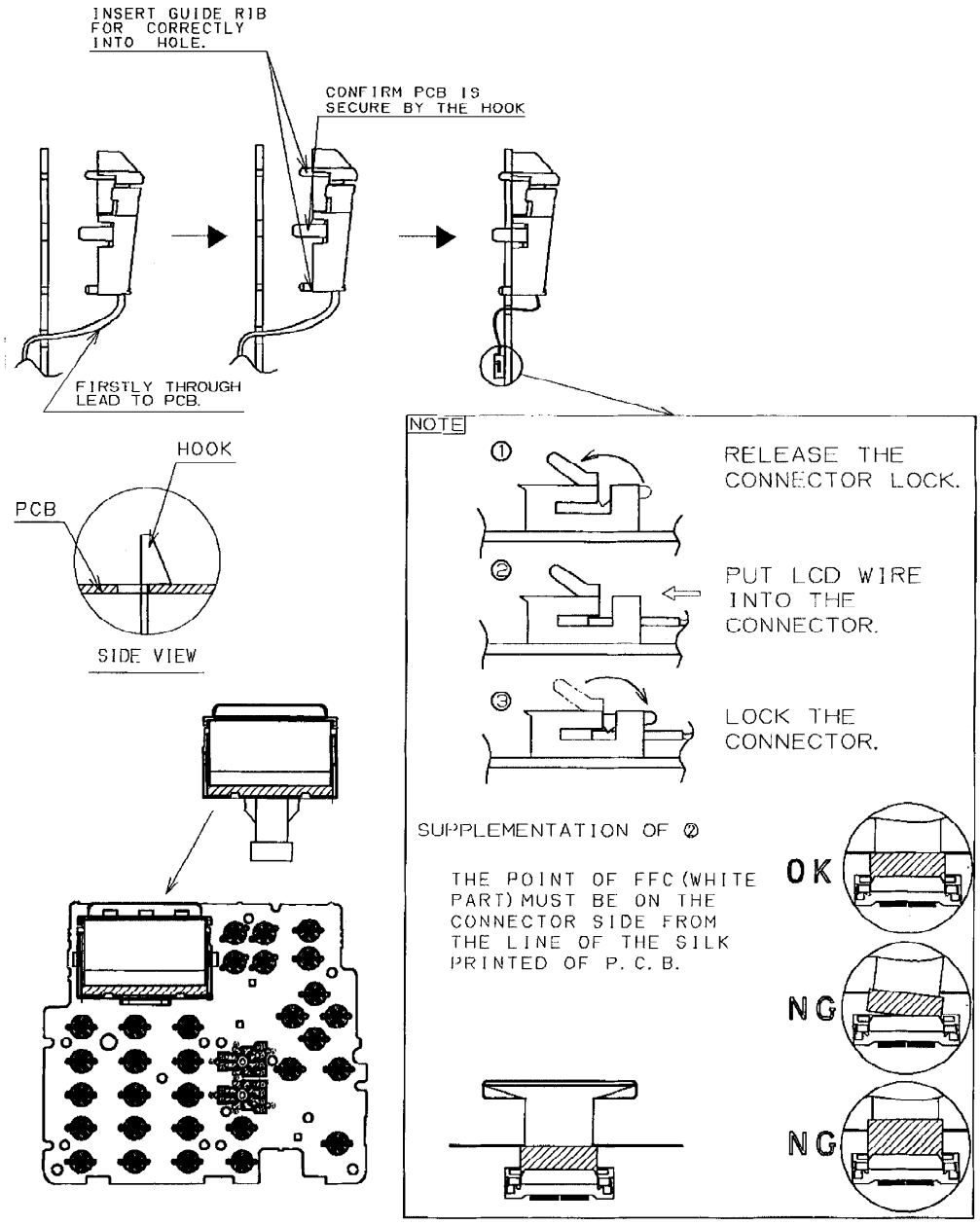


Fig. 6

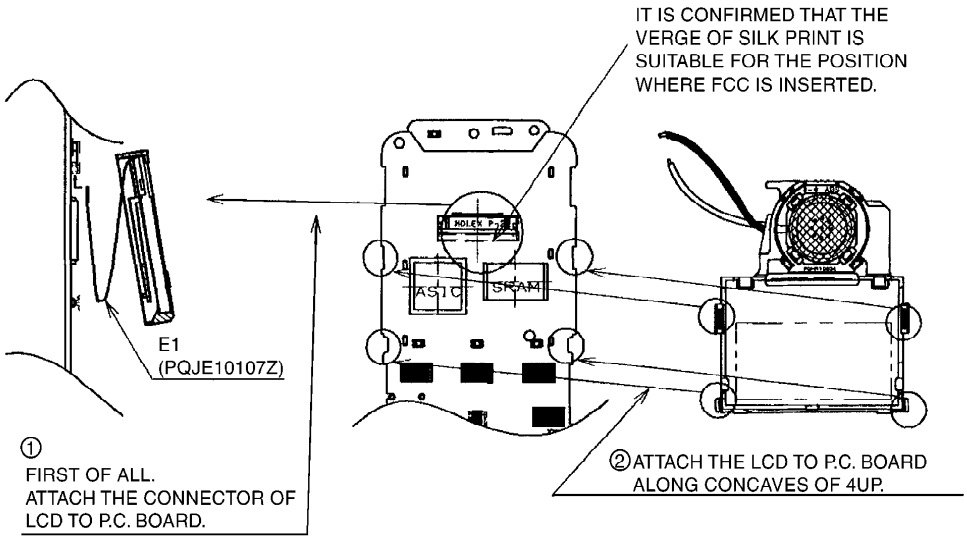
Shown in Fig.-	To Remove	Remove
1	Lower Cabinet	Screws (2.6 × 14) × 4
2	Main P.C. Board	Remove the P.C. Board
3	Operational P.C. Board	Screws (2.6 × 8) × 7
4	Battery Cover	Remove the Battery Cover
5	Rear Cabinet	Screws (2 × 8) × 2
6	Main P.C. Board	Remove the P.C. Board

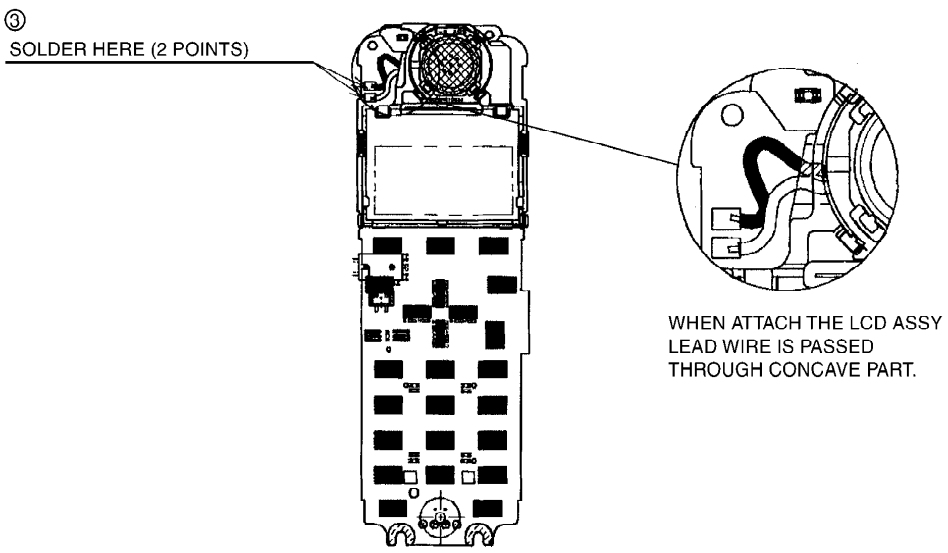
7. ASSEMBLY INSTRUCTIONS

7.1. Assembly the LCD to P.C. Board (Base Unit)


INSERT GUIDE RIB FOR CORRECTLY INTO HOLE.
CONFIRM PCB IS SECURE BY THE HOOK
FIRSTLY THROUGH LEAD TO PCB.
HOOK
PCB
SIDE VIEW
NOTE
RELEASE THE CONNECTOR LOCK.
PUT LCD WIRE INTO THE CONNECTOR.
LOCK THE CONNECTOR.
SUPPLEMENTATION OF ②
THE POINT OF FFC (WHITE PART) MUST BE ON THE CONNECTOR SIDE FROM THE LINE OF THE SILK PRINTED OF P. C. B.
OK
NG
NG

7.2. Assembly the LCD to P.C. Board (Handset)





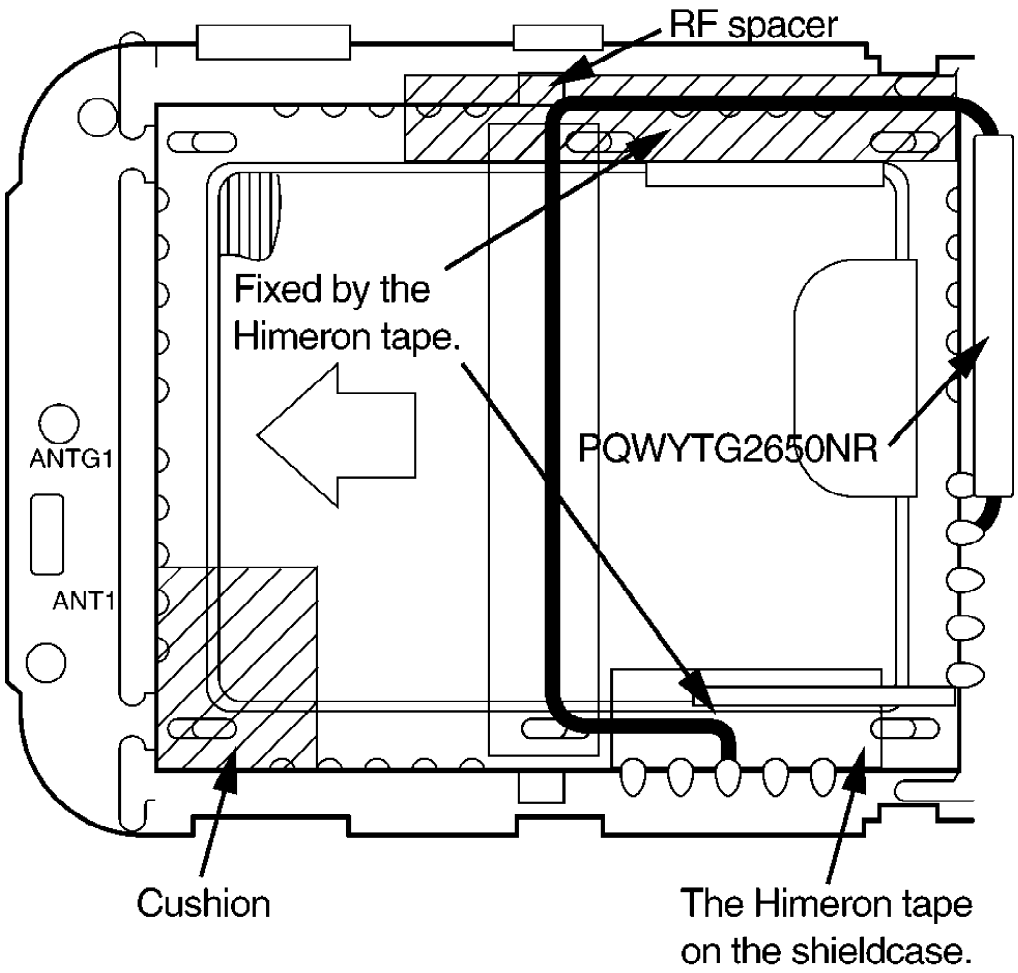
7.3. Replace the RF unit

For HS

Follow this procedure below when replacing HS RF (*1) unit.

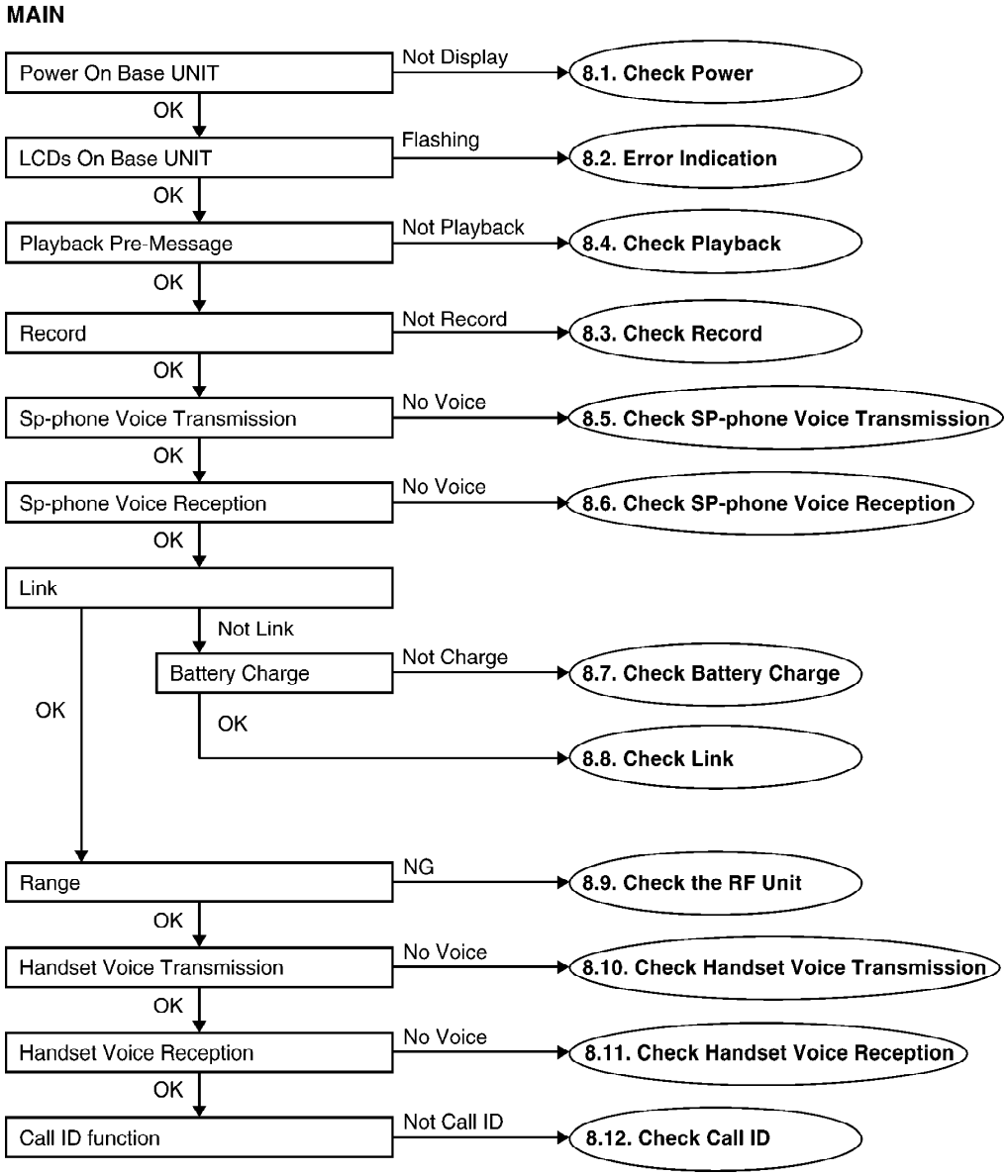
1. **Remove speaker cables of LCD unit on HS main board. / And remove LCD unit.**
2. **Remove solder on six legs of RF unit.**
3. **Take tape off on wire.**
4. **Remove Capacitor with wire on RF unit.**
5. **Take tape off on RF shield case.**
6. **Remove solder on all pads of RF unit.**

7. **Replace defective RF unit with new HS RF unit.**
   NOTE:
   Do not use BU RF unit for HS one.
   HS RF unit is different from BU one.
8. **Solder all pads of RF unit.**
9. **Stick tape on RF pads like figure below.**
10. **Put and solder a capacitor with wire at specified pads / [See CIRCUIT BOARD (Handset)].**
11. **Stick tape on wire.**
12. **Solder six Rf legs.**
13. **Put LCD unit and solder speaker wire.**
    NOTE:
    Speaker wire has polarity.



(*1) HS RF service parts NO. PQWPTG2650KT (RF Block kit)

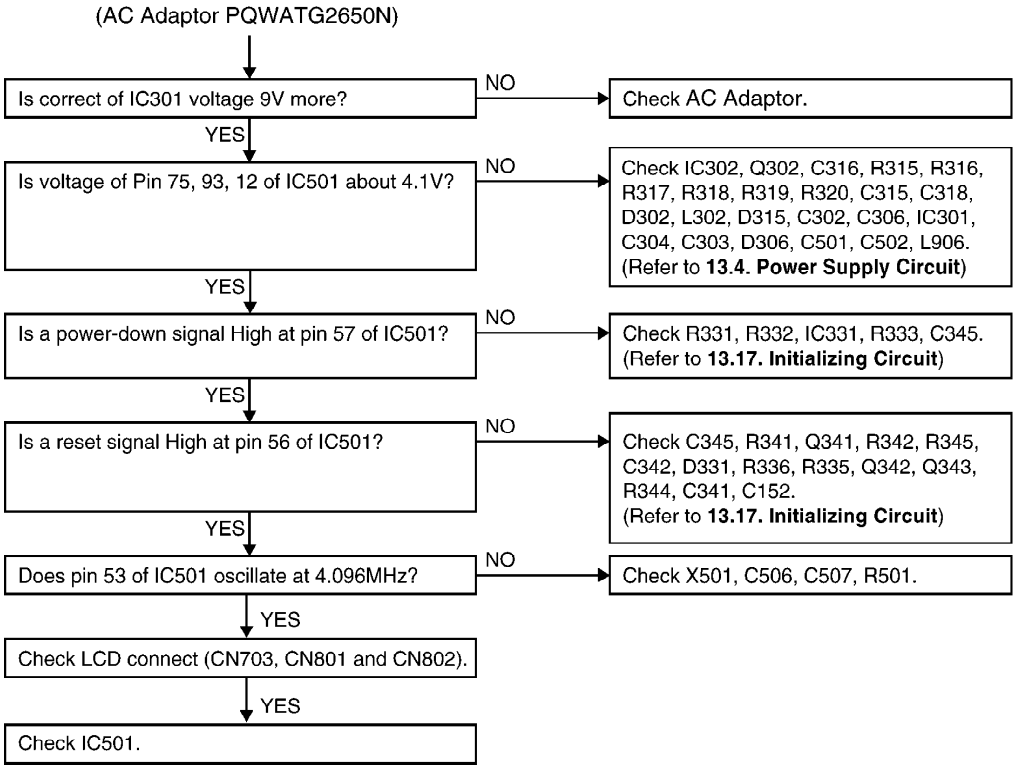
8. TROUBLESHOOTING GUIDE



8.1. Check Power

BASE UNIT

Is the AC Adaptor inserted into 120V outlet?


(AC Adaptor PQWATG2650N)
Is correct of IC301 voltage 9V more?
NO
Check AC Adaptor.
YES
Is voltage of Pin 75, 93, 12 of IC501 about 4.1V?
NO
Check IC302, Q302, C316, R315, R316, R317, R318, R319, R320, C315, C318, D302, L302, D315, C302, C306, IC301, C304, C303, D306, C501, C502, L906. (Refer to 13.4. Power Supply Circuit)
YES
Is a power-down signal High at pin 57 of IC501?
NO
Check R331, R332, IC331, R333, C345. (Refer to 13.17. Initializing Circuit)
YES
Is a reset signal High at pin 56 of IC501?
NO
Check C345, R341, Q341, R342, R345, C342, D331, R336, R335, Q342, Q343, R344, C341, C152. (Refer to 13.17. Initializing Circuit)
YES
Does pin 53 of IC501 oscillate at 4.096MHz?
NO
Check X501, C506, C507, R501.
YES
Check LCD connect (CN703, CN801 and CN802).
YES
Check IC501.

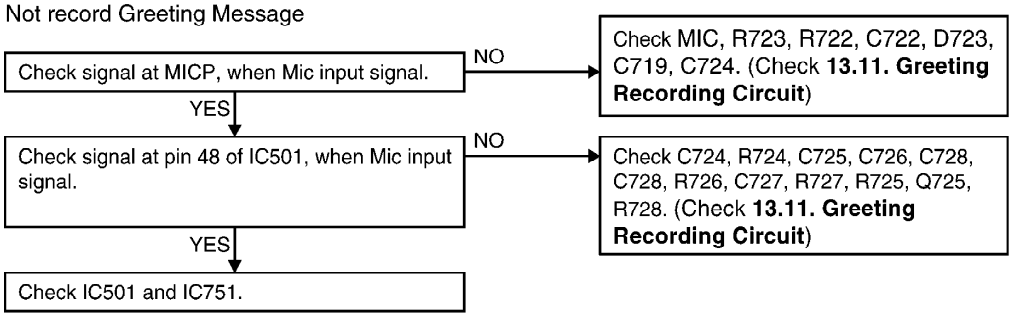
8.2. Error Indication

Symptom	Remedy
The Flash Memory (IC751) is defective when all LED's of the base unit flash.	1. Confirm Flash Memory is equipped. 2. Confirm the connection of Flash Memory. 3. Confirm the power supply of Flash Memory. When no error is found in above-mentioned items, Flash Memory has a defect. Replace Flash Memory.

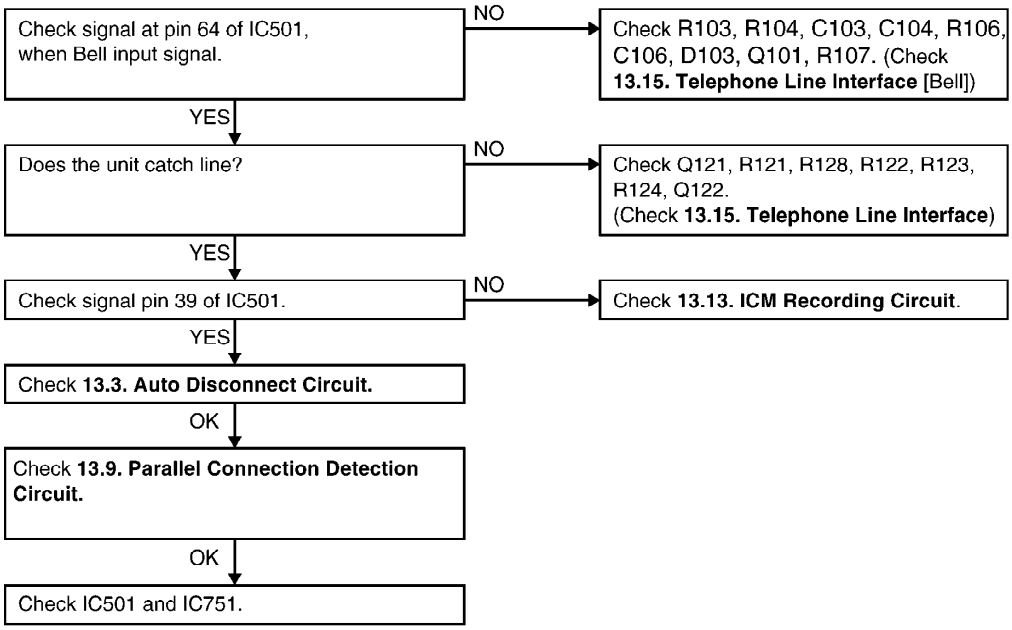
8.3. Check Record

BASE UNIT

Not record Greeting Message

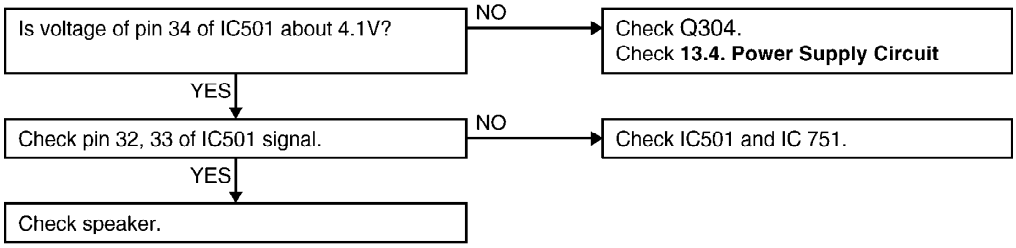

Check signal at MICP, when Mic input signal.
NO
Check MIC, R723, R722, C722, D723, C719, C724. (Check 13.11. Greeting Recording Circuit)
YES
Check signal at pin 48 of IC501, when Mic input signal.
NO
Check C724, R724, C725, C726, C728, C728, R726, C727, R727, R725, Q725, R728. (Check 13.11. Greeting Recording Circuit)
YES
Check IC501 and IC751.

Not record Incoming Message


Check signal at pin 64 of IC501, when Bell input signal.
NO
Check R103, R104, C103, C104, R106, C106, D103, Q101, R107. (Check 13.15. Telephone Line Interface [Bell])
YES
Does the unit catch line?
NO
Check Q121, R121, R128, R122, R123, R124, Q122. (Check 13.15. Telephone Line Interface)
YES
Check signal pin 39 of IC501.
NO
Check 13.13. ICM Recording Circuit.
YES
Check 13.3. Auto Disconnect Circuit.
OK
Check 13.9. Parallel Connection Detection Circuit.
OK
Check IC501 and IC751.

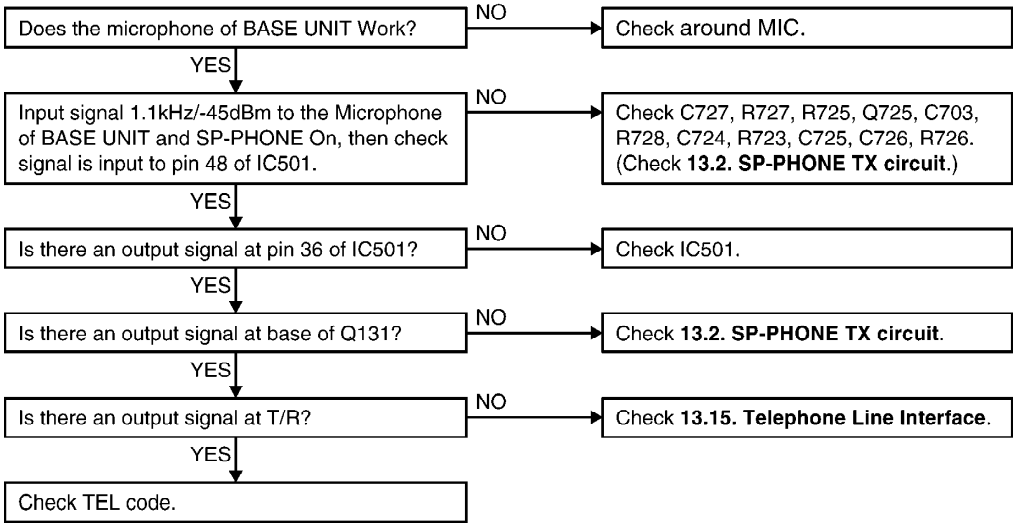
8.4. Check Playback

BASE UNIT



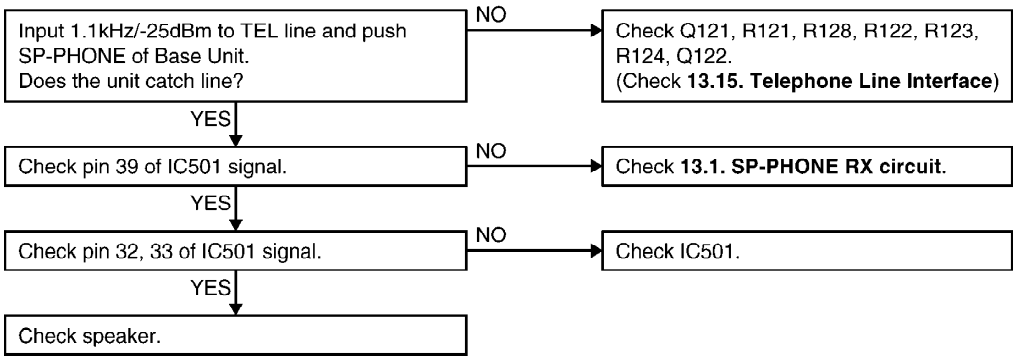
8.5. Check SP-phone Voice Transmission

BASE UNIT

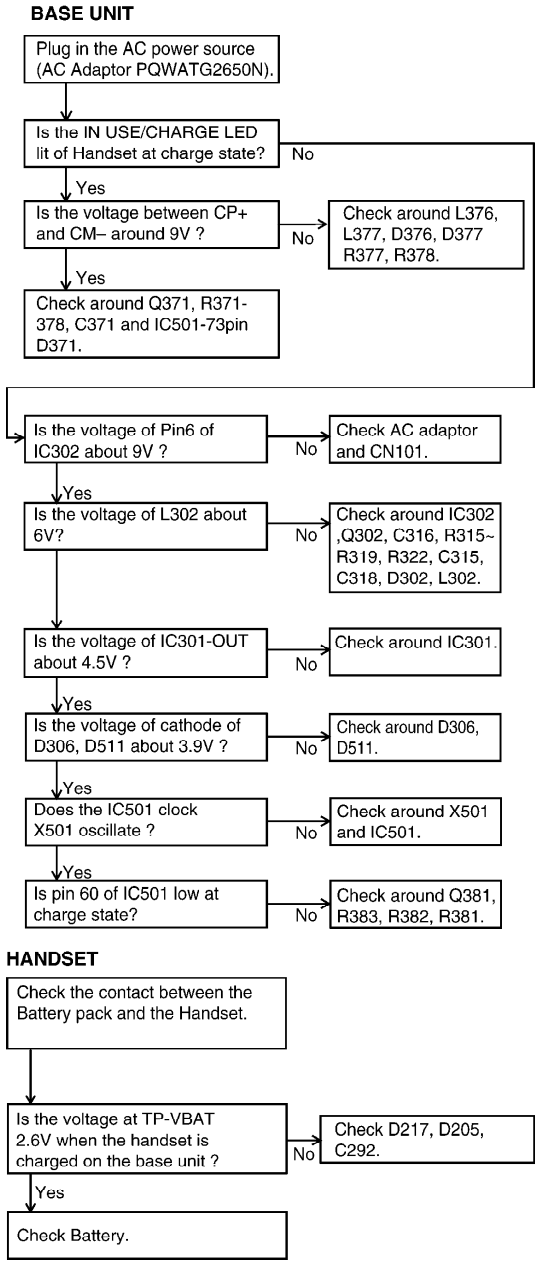

Does the microphone of BASE UNIT Work?
NO
Check around MIC.
YES
Input signal 1.1kHz/-45dBm to the Microphone of BASE UNIT and SP-PHONE On, then check signal is input to pin 48 of IC501.
NO
Check C727, R727, R725, Q725, C703, R728, C724, R723, C725, C726, R726. (Check 13.2. SP-PHONE TX circuit.)
YES
Is there an output signal at pin 36 of IC501?
NO
Check IC501.
YES
Is there an output signal at base of Q131?
NO
Check 13.2. SP-PHONE TX circuit.
YES
Is there an output signal at T/R?
NO
Check 13.15. Telephone Line Interface.
YES
Check TEL code.

8.6. Check SP-phone Voice Reception

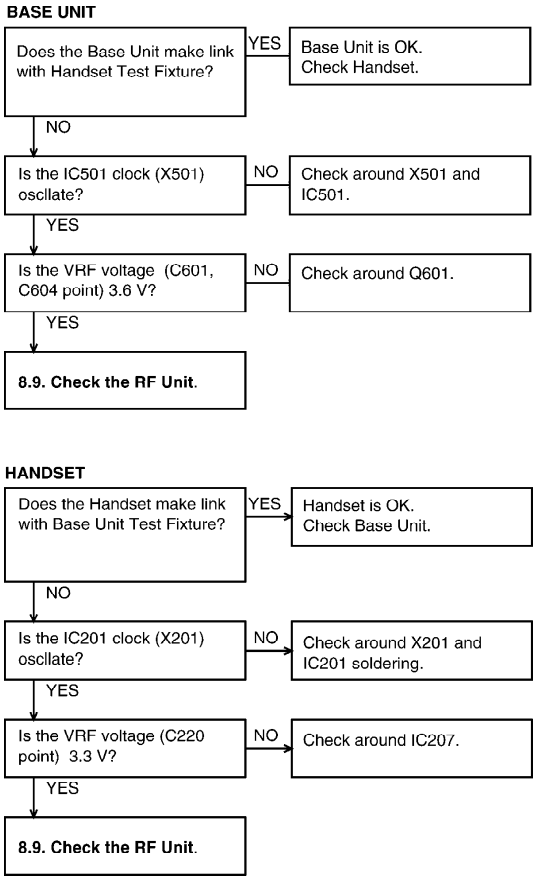
BASE UNIT


Input 1.1kHz/-25dBm to TEL line and push SP-PHONE of Base Unit. Does the unit catch line?
NO
Check Q121, R121, R128, R122, R123, R124, Q122. (Check 13.15. Telephone Line Interface)
YES
Check pin 39 of IC501 signal.
NO
Check 13.1. SP-PHONE RX circuit.
YES
Check pin 32, 33 of IC501 signal.
NO
Check IC501.
YES
Check speaker.

8.7. Check Battery Charge


BASE UNIT
Plug in the AC power source (AC Adaptor PQWATG2650N).
Is the IN USE/CHARGE LED lit of Handset at charge state?
No
Yes
Is the voltage between CP+ and CM– around 9V ?
No
Check around L376, L377, D376, D377 R377, R378.
Yes
Check around Q371, R371-378, C371 and IC501-73pin D371.
Is the voltage of Pin6 of IC302 about 9V ?
No
Check AC adaptor and CN101.
Yes
Is the voltage of L302 about 6V?
No
Check around IC302 ,Q302, C316, R315~ R319, R322, C315, C318, D302, L302.
Is the voltage of IC301-OUT about 4.5V ?
No
Check around IC301.
Yes
Is the voltage of cathode of D306, D511 about 3.9V ?
No
Check around D306, D511.
Yes
Does the IC501 clock X501 oscillate ?
No
Check around X501 and IC501.
Yes
Is pin 60 of IC501 low at charge state?
No
Check around Q381, R383, R382, R381.
HANDSET
Check the contact between the Battery pack and the Handset.
Is the voltage at TP-VBAT 2.6V when the handset is charged on the base unit ?
No
Check D217, D205, C292.
Yes
Check Battery.

8.8. Check Link



8.9. Check the RF Unit

8.9.1. Finding out the Defective Unit

Prepare HS Test Fixture and BU Test Fixture. Place the HS Test Fixture on the cradle of the base unit for checking, then confirm that they are linked. Place the handset for checking on the cradle of the BU Test Fixture, then confirm that they are linked. How to confirm the link is as follows; press the TALK button and confirm Handset in use' is displayed on BU LCD.

8.9.2. Check Items

The headset Jack has been wired as a switch to control Normal and test modes on this "HS Test Fixture".

8.9.2.1. Handset Test Fixture for Base Unit

Test Fixture has two mode.

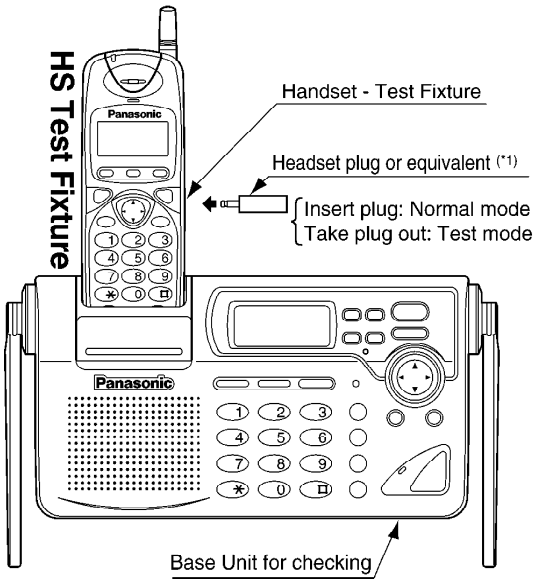
1. **TEST mode:**
   Use test fixture without headset plug inserted. / Then Test fixture is in TEST mode.
2. **Normal mode:**
   Plug headset plug into headset jack. / Then Test fixture is in Normal mode.

NOTE:

Audio is coming from Receiver whether headset plug is inserted or not.

This test simulates the handset is at very large distance from the base unit and the TX signal from handset to base is very small.
Procedure: First place handset Test Fixture on base under test to charge (exchange security code); then remove handset from base after you hear a beep; then press TALK to operate. The LCD will show TALK. This means that the base unit sensitivity is OK.

NOTE:
1) Only KX-TG2670N with marks HS Test Fixture can be used for troubleshooting. Regular KX-TG2670N production samples does not have the software needed for troubleshooting.


HS Test Fixture
Handset - Test Fixture
Headset plug or equivalent (*1)
Insert plug: Normal mode
Take plug out: Test mode
Base Unit for checking

8.9.2.2. Base Unit Test Fixture for Handset

The headset Jack has been wired as a switch to control normal and test modes on this BU Test Fixture.
Test Fixture has two mode.

1. TEST mode:
Use test fixture without headset plag inserted. / Then Test fixture is in TEST mode.

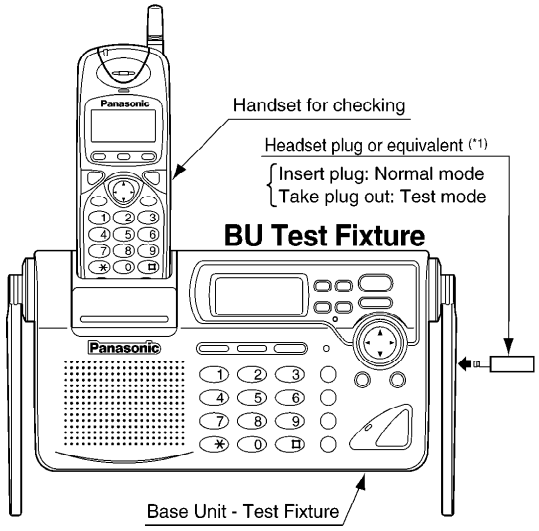
2. Normal mode:
Plug headset plug into headset jack. / Then Test fixture is in Normal mode.

NOTE:

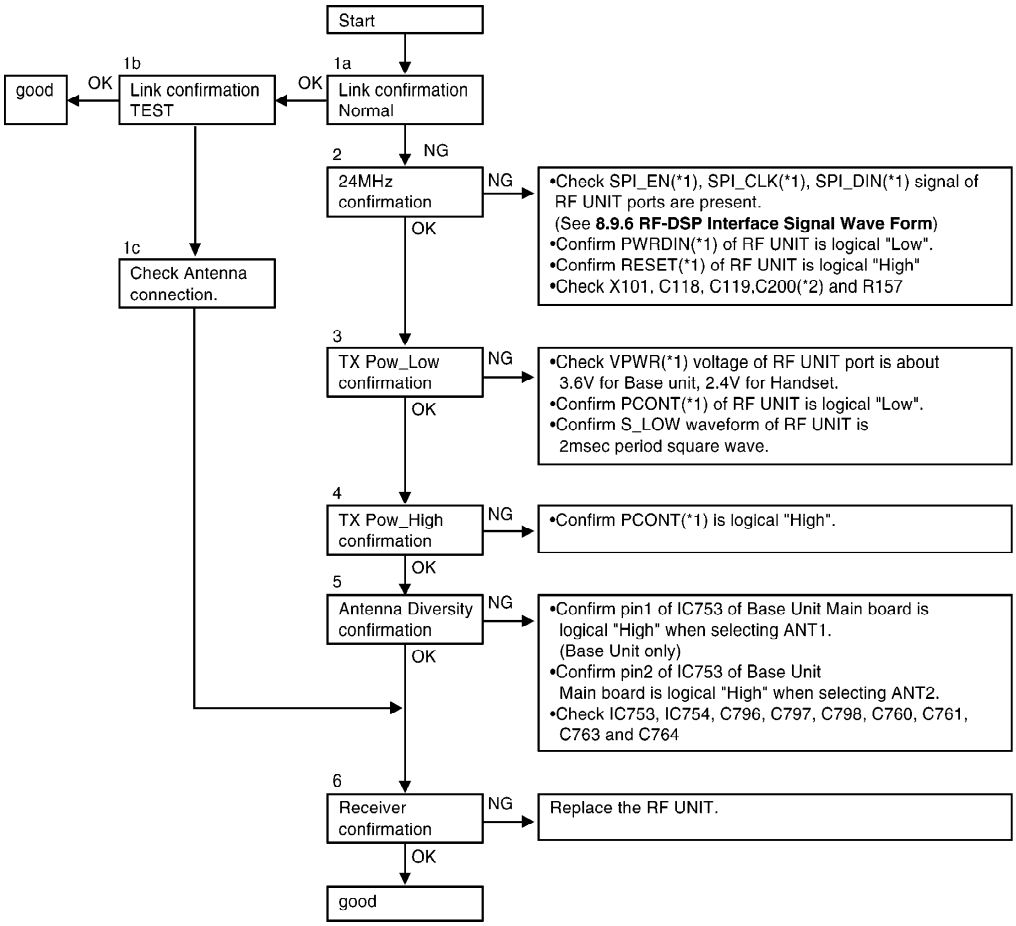
Audio is coming from Receiver whether headset plug is inserted or not.

This test simulates the handset is at very large distance from the base unit and the TX signal

from base to handset is very small.
Procedure: First, place handset under test to charge (exchange security code), then remove handset from base after you hear a beep. Press TALK button on handset and if it links with the base, then this handset sensitivity is OK.
NOTE:
1) Only KX-TG2670N with marks BU Test Fixture can be used for troubleshooting. Regular KX-TG2670N production samples does not have the software needed for troubleshooting.



8.9.3. RF Check Flowchart


Start
1a
Link confirmation Normal
OK
1b
Link confirmation TEST
OK
good
2
24MHz confirmation
NG
OK
•Check SPI_EN(*1), SPI_CLK(*1), SPI_DIN(*1) signal of RF UNIT ports are present. (See 8.9.6 RF-DSP Interface Signal Wave Form)
•Confirm PWRDIN(*1) of RF UNIT is logical "Low".
•Confirm RESET(*1) of RF UNIT is logical "High"
•Check X101, C118, C119,C200(*2) and R157
1c
Check Antenna connection.
3
TX Pow_Low confirmation
NG
OK
•Check VPWR(*1) voltage of RF UNIT port is about 3.6V for Base unit, 2.4V for Handset.
•Confirm PCONT(*1) of RF UNIT is logical "Low".
•Confirm S_LOW waveform of RF UNIT is 2msec period square wave.
4
TX Pow_High confirmation
NG
OK
•Confirm PCONT(*1) is logical "High".
5
Antenna Diversity confirmation
NG
OK
•Confirm pin1 of IC753 of Base Unit Main board is logical "High" when selecting ANT1. (Base Unit only)
•Confirm pin2 of IC753 of Base Unit Main board is logical "High" when selecting ANT2.
•Check IC753, IC754, C796, C797, C798, C760, C761, C763 and C764
6
Receiver confirmation
NG
OK
Replace the RF UNIT.
good

(*1) See RF Unit Reference Drawing.
(*2) Base unit RF only.

8.9.4. Check Table for RF Block

No.	Item	BU (Base unit) (*1)	HS (Handset) (*1)
1a	Link confirmation Normal	1. Insert headset plug to headset jack of "HS Test Fixture". / 2. Press [TALK] key of "HS Test Fixture" to establish link about one foot (30cm) away from "Base unit". / 3. Confirm to link.	1. Insert headset plug to heac of "BU Test Fixture". / 2. Pres key of "Handset" to establish about one foot (30cm) away f Test Fixture". / 3. Confirm to l
1b	Link confirmation Test	1. Take headset plug off from headset jack of "HS Test Fixture". / 2. Press [TALK] key of "HS Test Fixture" to establish link about one foot (30cm) away from "Base unit". / 3. Confirm to link.	1. Take headset plug off from jack of "BU Test Fixture". / 2. [TALK] key of "Handset" to e: link about one foot (30cm) aw "BU Test Fixture". / 3. Confirr
1c	Check Antenna connection	1. Check ANT1(*2) and ANT2(*2) soldering. / 2. Check ANT1(*2) and ANT2(*2) points are not shorted to GND.	1. Check Antenna(*3) on HS mainboard soldering. / 2. Che extendable Antenna of HS ca
2	24MHz confirmation	1. Set BU to [Test STANDBY] mode (*5) / 2. Confirm X101 frequency within 24MHz ± 720Hz at TP_FREQ(*4) of RF Unit.	1. Set HS to [Test STANDBY] / 2. Confirm X101 frequency 24MHz ± 720Hz at TP_FREQ(* Unit.
3	TX Pow_Low confirmation	1. Put wire to ANT1(*2) and GND(*2) / 2. Connect this wire to Spectrum analyzer or Marconi. / 3. Set BU to [Low Power] mode (*5) 4. Confirm TX power level within -5 ~ +10dBm (*6)	1. Remove Antenna on HS ma Put wire to ANT(*3) and GND Connect this wire to Spectrur analyzer or Marconi. / 3. Set H [Low Power] mode (*5) / 4. Cc power level within -5 ~ +10dB
4	TX Pow_High confirmation	5. Set BU to [High Power] mode (*5) / 6. Confirm TX power level within +20± 4dBm (*6)	5. Set HS to [High Power] mo 6. Confirm TX power level wit 4dBm (*6)
5	Antenna Diversity confirmation	7. Set BU to [Test STANDBY] mode (* 5) (Press [Locator key] once]) / 8. Put wire to ANT2 (*2) and GND (*2) / 9. Connect this wire to Spectrum analyzer or Marconi / 10. Press [1] key / 11. Set BU to [High Power] mode (*5) / 12. Confirm TX power level within +20 ±4dBm (*6)	
6	Receiver confirmation	Same as Item 1b.	Same as Item 1b.

(*1) BU; Base Unit, HS; Handset.
(*2) See Base Unit Reference Drawing.
(*3) See Handset Reference Drawing.
(*4) See RF Unit Reference Drawing.
(*5) See TEST MODE AND ADJUSTMENT.
(*6) See TX-Power Specification Table Table to get correlated value of TX-Power limit.

8.9.5. TX-Power Specification Table

TX-Power (Low) Limit (without 20dB Attenuator)

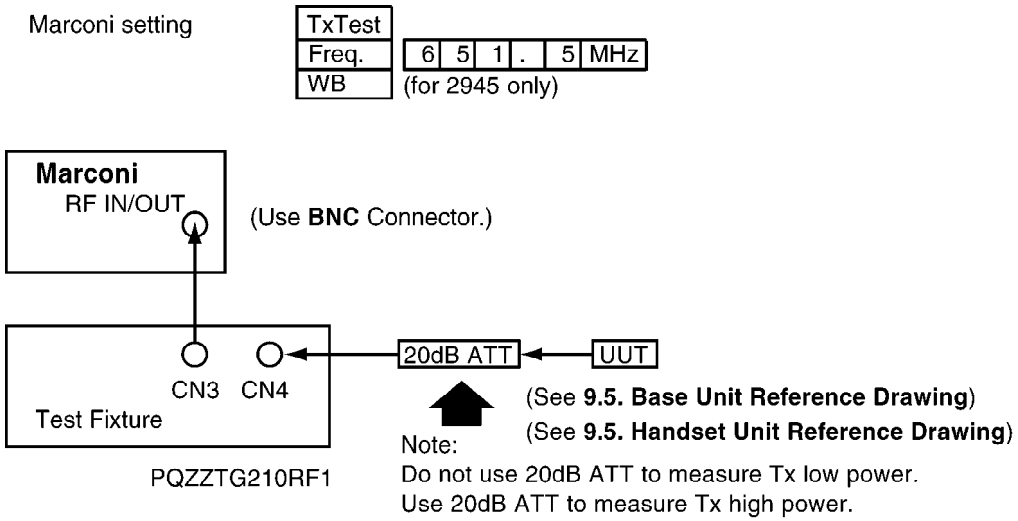
Loss (CN4-CN3)		15.5dB	15.6dB	15.7dB	15.8dB	15.9dB
Test Equipment	Unit	Low ~ High	Low ~ High	Low ~ High	Low ~ High	Low ~ High
Spectrum Analyzer	dBm	-5 ~ 10	-5 ~ 10	-5 ~ 10	-5 ~ 10	-5 ~ 10
Marconi 2945or SP-ANA w/JIG	dBm	-20.5 ~ -5.5	-20.6 ~ -5.6	-20.7 ~ -5.7	-20.8 ~ -5.8	-20.9 ~ -5.9
	μW	8.9 ~ 281.8	8.7 ~ 275.4	8.5 ~ 269.2	8.3 ~ 263.0	8.1 ~ 257.0
Marconi 2955B	dBm	-21.7 ~ -6.7	-21.8 ~ -6.8	-21.9 ~ -6.9	-22.0 ~ -7.0	-22.1 ~ -7.1
	μW	6.8 ~ 213.8	6.6 ~ 208.9	6.5 ~ 204.2	6.3 ~ 199.5	6.2 ~ 195.0

Loss (CN4-CN3)		16.0dB	16.1dB	16.2dB	16.3dB	16.4dB
Test Equipment	Unit	Low ~ High	Low ~ High	Low ~ High	Low ~ High	Low ~ High
Spectrum Analyzer	dBm	-5 ~ 10	-5 ~ 10	-5 ~ 10	-5 ~ 10	-5 ~ 10
Marconi 2945or SP-ANA w/JIG	dBm	-21.0 ~ -6.0	-21.1 ~ -6.1	-21.2 ~ -6.2	-21.3 ~ -6.3	-21.4 ~ -6.4
	μW	7.9 ~ 251.2	7.8 ~ 245.5	7.6 ~ 239.9	7.4 ~ 234.4	7.2 ~ 229.1
Marconi 2955B	dBm	-22.2 ~ -7.2	-22.3 ~ -7.3	-22.4 ~ -7.4	-22.5 ~ -7.5	-22.6 ~ -7.6
	μW	6.0 ~ 190.5	5.9 ~ 186.2	5.8 ~ 182.0	5.6 ~ 177.8	5.5 ~ 173.8

TX Power (High) Limit (with 20dB Attenuator)

Loss (CN4-CN3)		15.5dB	15.6dB	15.7dB	15.8dB	15.9dB
Test Equipment	Unit	Low ~ High	Low ~ High	Low ~ High	Low ~ High	Low ~ High
Spectrum Analyzer	dBm	16 ~ 24	16 ~ 24	16 ~ 24	16 ~ 24	16 ~ 24
Marconi 2945or SP-ANA w/JIG	dBm	-19.5 ~ -11.5	-19.6 ~ -11.6	-19.7 ~ -11.7	-19.8 ~ -11.8	-19.9 ~ -11.9
	μW	11.2 ~ 70.8	11.0 ~ 69.2	10.7 ~ 67.6	10.5 ~ 66.1	10.2 ~ 64.6
Marconi 2955B	dBm	-20.7 ~ -12.7	-20.8 ~ -12.8	-20.9 ~ -12.9	-21.0 ~ -13.0	-21.1 ~ -13.1
	μW	8.5 ~ 53.7	8.3 ~ 52.5	8.1 ~ 51.3	7.9 ~ 50.1	7.8 ~ 49.0

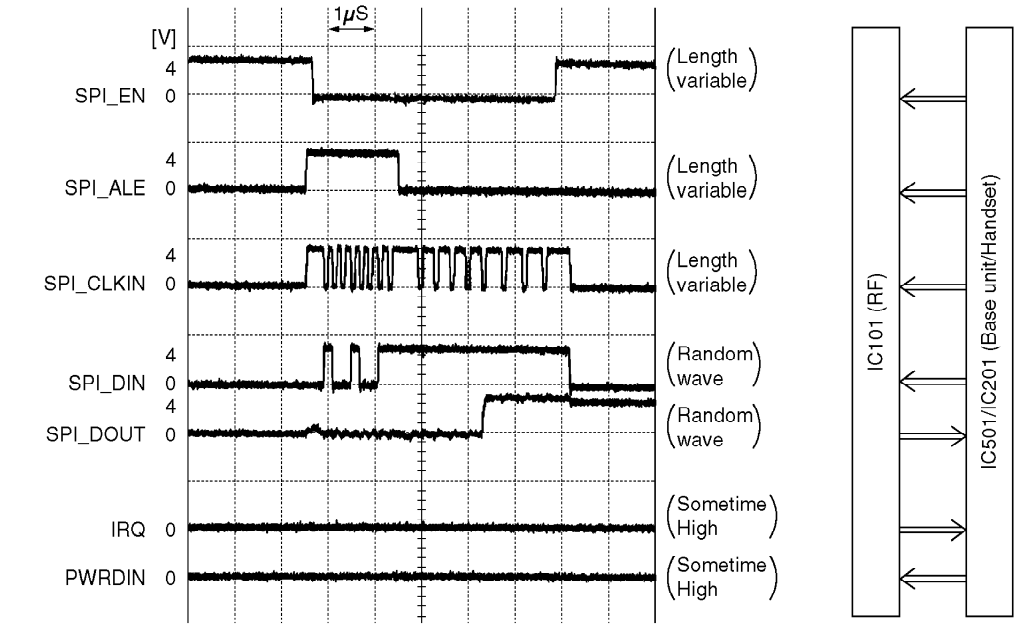
Loss (CN4-CN3)		16.0dB			16.1dB			16.2dB			16.3dB			16.4dB		
Test Equipment	Unit	Low		High	Low		High	Low		High	Low		High	Low		High
Spectrum Analyzer	dBm	16	~	24	16	~	24	16	~	24	16	~	24	16	~	24
Marconi 2945or SP-ANA w/JIG	dBm	-21.2	~	-13.2	-21.3	~	-13.3	-21.4	~	-13.4	-21.5	~	-13.5	-21.6	~	-13.6
	μW	7.6	~	47.9	7.4	~	46.8	7.2	~	45.7	7.1	~	44.7	6.9	~	43.7
Marconi 2955B	dBm	-21.2	~	-13.2	-21.3	~	-13.3	-21.4	~	-13.4	-21.5	~	-13.5	-21.6	~	-13.6
	μW	7.6	~	47.9	7.4	~	46.8	7.2	~	45.7	7.1	~	44.7	6.9	~	43.7



8.9.6. RF-DSP Interface Signal Wave Form

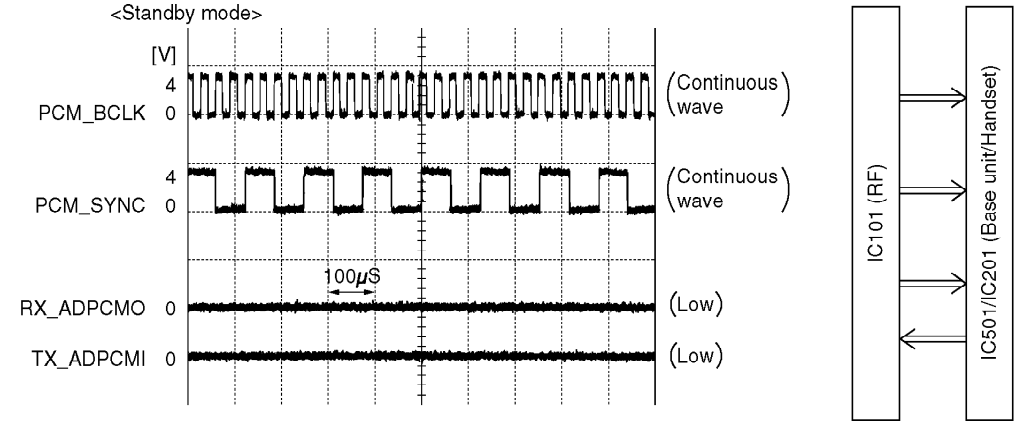
(1) Serial control line

<Standby mode>

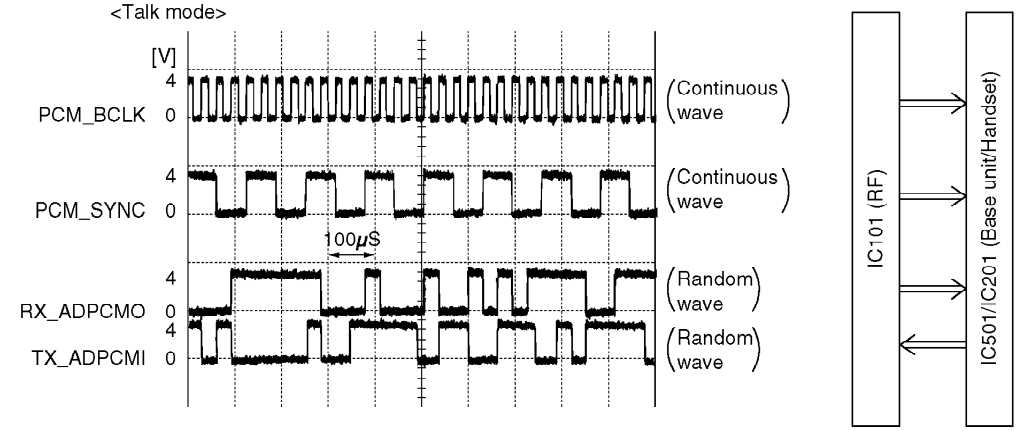


(2) ADPCM (Digital sound) line

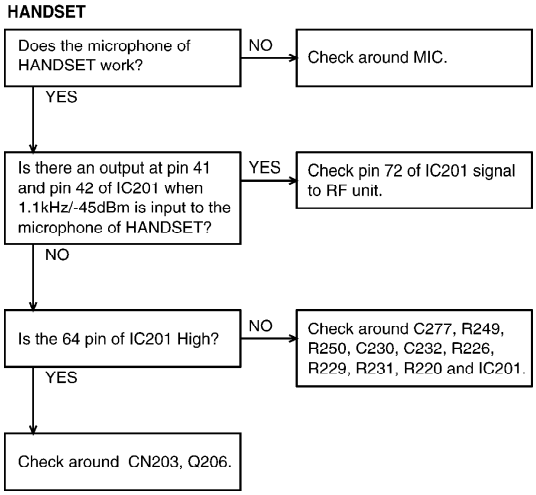
<Standby mode>

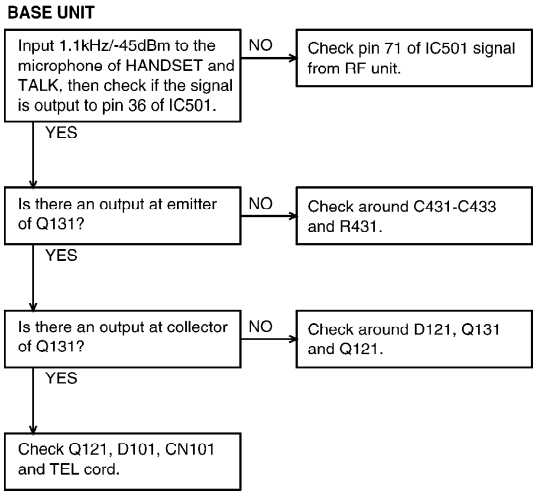


<Talk mode>



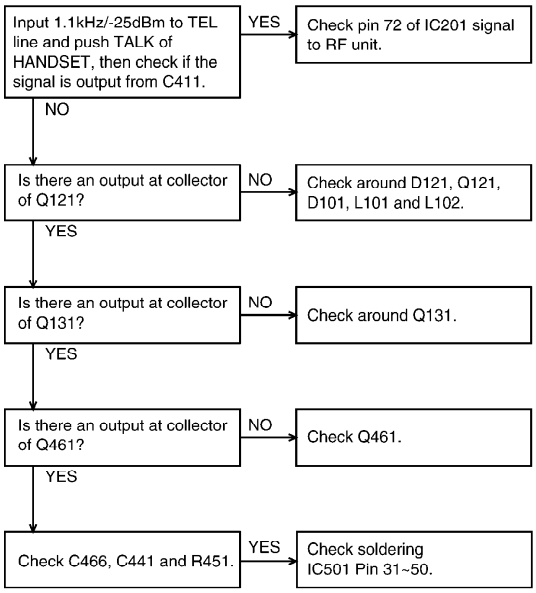
8.10. Check Handset Voice Transmission


HANDSET
Does the microphone of HANDSET work?
NO
Check around MIC.
YES
Is there an output at pin 41 and pin 42 of IC201 when 1.1kHz/-45dBm is input to the microphone of HANDSET?
YES
Check pin 72 of IC201 signal to RF unit.
NO
Is the 64 pin of IC201 High?
NO
Check around C277, R249, R250, C230, C232, R226, R229, R231, R220 and IC201.
YES
Check around CN203, Q206.

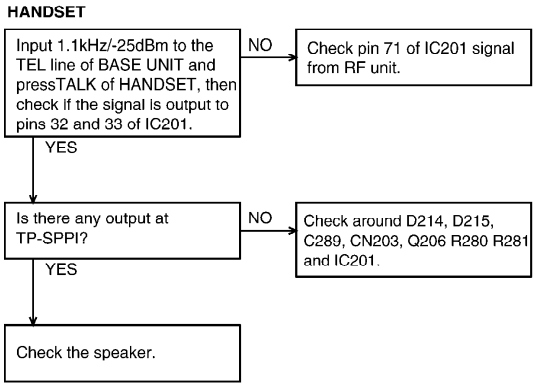

BASE UNIT
Input 1.1kHz/-45dBm to the microphone of HANDSET and TALK, then check if the signal is output to pin 36 of IC501.
NO
Check pin 71 of IC501 signal from RF unit.
YES
Is there an output at emitter of Q131?
NO
Check around C431-C433 and R431.
YES
Is there an output at collector of Q131?
NO
Check around D121, Q131 and Q121.
YES
Check Q121, D101, CN101 and TEL cord.

8.11. Check Handset Voice Reception

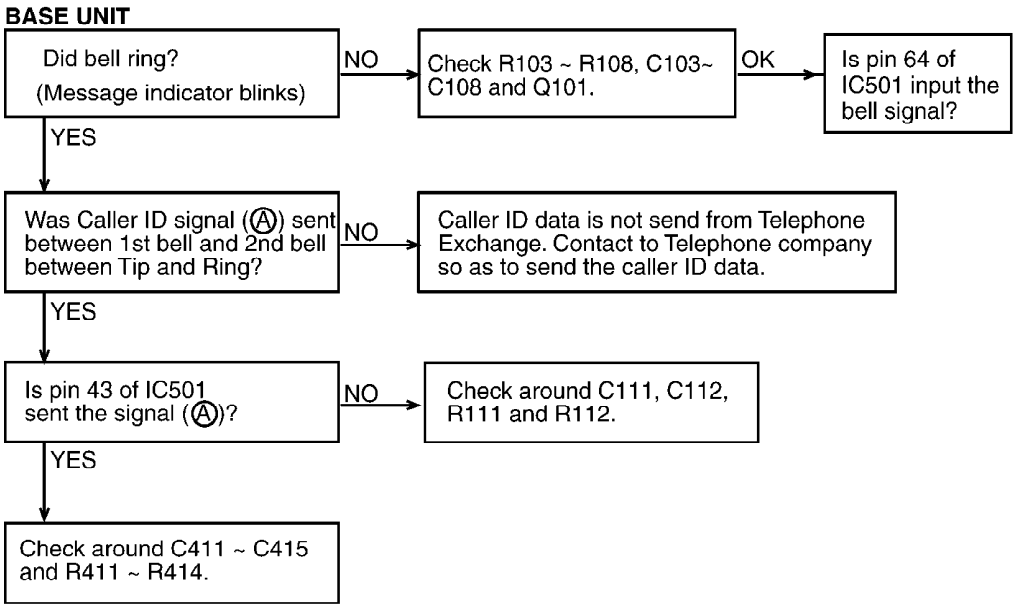
BASE UNIT

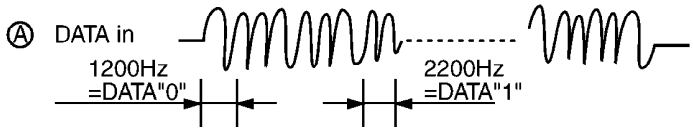

Input 1.1kHz/-25dBm to TEL line and push TALK of HANDSET, then check if the signal is output from C411.
YES
Check pin 72 of IC201 signal to RF unit.
NO
Is there an output at collector of Q121?
NO
Check around D121, Q121, D101, L101 and L102.
YES
Is there an output at collector of Q131?
NO
Check around Q131.
YES
Is there an output at collector of Q461?
NO
Check Q461.
YES
Check C466, C441 and R451.
YES
Check soldering IC501 Pin 31~50.

HANDSET


Input 1.1kHz/-25dBm to the TEL line of BASE UNIT and pressTALK of HANDSET, then check if the signal is output to pins 32 and 33 of IC201.
NO
Check pin 71 of IC201 signal from RF unit.
YES
Is there any output at TP-SPPI?
NO
Check around D214, D215, C289, CN203, Q206 R280 R281 and IC201.
YES
Check the speaker.

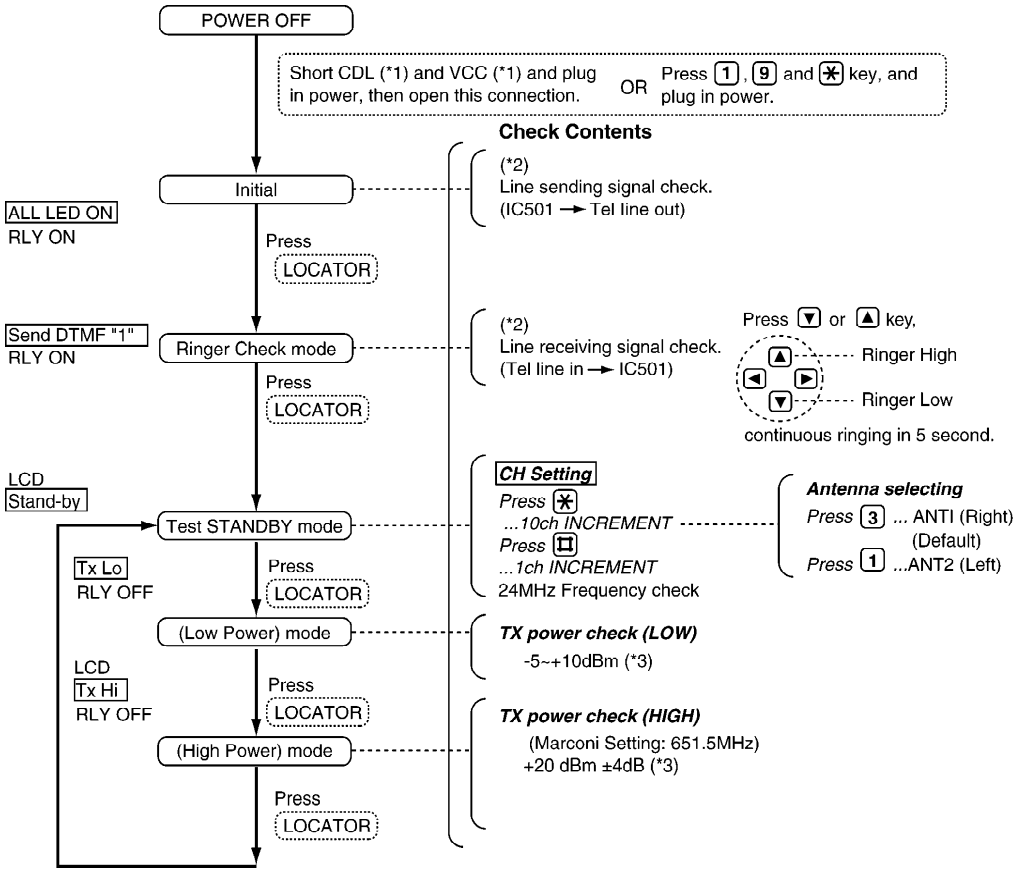
8.12. Check Call ID


BASE UNIT
Did bell ring?
(Message indicator blinks)
NO
Check R103 ~ R108, C103~ C108 and Q101.
OK
Is pin 64 of IC501 input the bell signal?
YES
Was Caller ID signal (Ⓐ) sent between 1st bell and 2nd bell between Tip and Ring?
NO
Caller ID data is not send from Telephone Exchange. Contact to Telephone company so as to send the caller ID data.
YES
Is pin 43 of IC501 sent the signal (Ⓐ)?
NO
Check around C111, C112, R111 and R112.
YES
Check around C411 ~ C415 and R411 ~ R414.



9. TEST MODE AND ADJUSTMENT

9.1. Test Mode Flow Chart for Base Unit

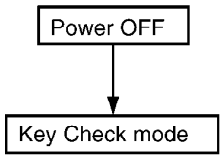


(*1) See Base Unit Reference Drawing.

(*2) Special check method for Base Unit individually.

(*3) See TX-Power Specification Table.

9.2. Key Check Mode



Pull up a TAM (*1) pin and Plug in power

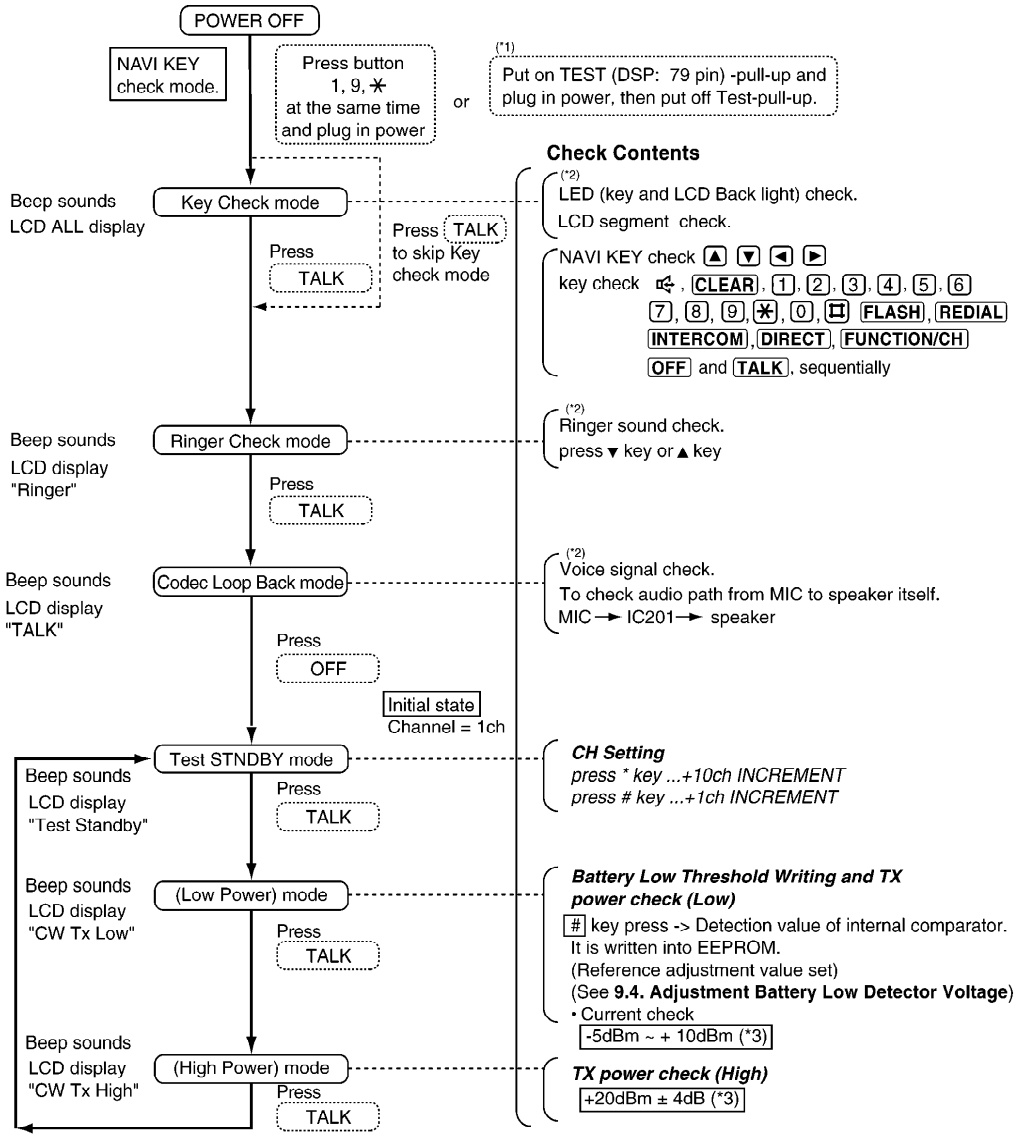
or

Press 3,7 and # key ,simultaneously and plug in power

Press all key without "LOCATOR" and press "LOCATOR" at the end.
Then, long beep is rung. This means all keys are OK.
If not, three beep (pi pi pi) is rung. This means to mistake to press keys or some key is wrong.

(*1) see Base Unit Reference Drawing

9.3. Test Mode Flow Chart for Handset


POWER OFF
NAVI KEY check mode.
Press button 1, 9, ✳ at the same time and plug in power
or
(*1)
Put on TEST (DSP: 79 pin) -pull-up and plug in power, then put off Test-pull-up.
Check Contents
Beep sounds LCD ALL display
Key Check mode
Press TALK to skip Key check mode
Press TALK
(*2)
LED (key and LCD Back light) check.
LCD segment check.
NAVI KEY check ▲ ▼ ◀ ▶
key check , CLEAR, 1, 2, 3, 4, 5, 6, 7, 8, 9, ✳, 0, # FLASH, REDIAL, INTERCOM, DIRECT, FUNCTION/CH, OFF and TALK, sequentially
Beep sounds LCD display "Ringer"
Ringer Check mode
Press TALK
(*2)
Ringer sound check.
press ▼ key or ▲ key
Beep sounds LCD display "TALK"
Codec Loop Back mode
Press OFF
(*2)
Voice signal check.
To check audio path from MIC to speaker itself.
MIC → IC201 → speaker
Initial state
Channel = 1ch
Beep sounds LCD display "Test Standby"
Test STNDBY mode
Press TALK
CH Setting
press * key ...+10ch INCREMENT
press # key ...+1ch INCREMENT
Beep sounds LCD display "CW Tx Low"
(Low Power) mode
Press TALK
Battery Low Threshold Writing and TX power check (Low)
key press -> Detection value of internal comparator.
It is written into EEPROM.
(Reference adjustment value set)
(See 9.4. Adjustment Battery Low Detector Voltage)
• Current check
-5dBm ~ + 10dBm (*3)
Beep sounds LCD display "CW Tx High"
(High Power) mode
Press TALK
TX power check (High)
+20dBm ± 4dB (*3)

(*1) See **9.6. Handset Reference Drawing**
(*2) Special check method for Handset individually.
(*3) See **8.9.5 TX Power specification Table**.

9.4. Adjustment Battery Low Detector Voltage

After replacing handset's DSP (IC201), Re-writing Battery Low voltage to EEPROM is required.
Following Test mode flow chart (Refer to Test Mode Flow Chart for Handset),
DC power supply and Battery connector are required in this adjustment.

1. Set 2.6V for DC power supply.
2. Place handset in test mode.
3. Press "TALK" key twice, "OFF" key once and "TALK" key again to TX-Low mode. (CW Tx Low is displayed on LCD)
4. Set 2.37V for DC power supply.
Note: Check voltage at battery connector, because some voltage drop is happened, using long or thin cable.
5. Press "#"key to write voltage value in EEPROM.
6. Turn power off. Then this value is available.

9.5. Base Unit Reference Drawing

9.6. Handset Reference Drawing

9.7. Frequency Table

(TDD: time division duplex)

Channel	TX/RX Frequency (GHz)	Channel	TX/RX Frequency (GHz)
1	2.4015	13	2.4375
2	2.4045	14	2.4405
3	2.4075	15	2.4435
4	2.4105	16	2.4465
5	2.4135	17	2.4495
6	2.4165	18	2.4525
7	2.4195	19	2.4555
8	2.4225	20	2.4585
9	2.4255	21	2.4615
10	2.4285	22	2.4645
11	2.4315	23	2.4675
12	2.4345	24	2.4705

10. DESCRIPTION

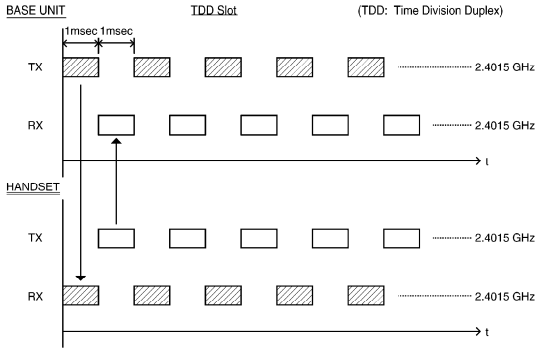
10.1. Frequency

The frequency range of 2.4015 GHz ~ 2.4705 GHz is used. Transmitting and receiving channel between base unit and handset is same frequency. Refer to the Frequency Table.

10.2. Time Division Duplex (TDD) operation

Transmission/reception between the base unit and handset is performed by time-sharing as shown in Fig. 7. 1 slot time of transmission and reception is 1mS.Same frequency is used in transmitting and receiving. The figure shows an example; the frequency of 1ch is used in transmitting between the base unit and handset.

Fig. 7

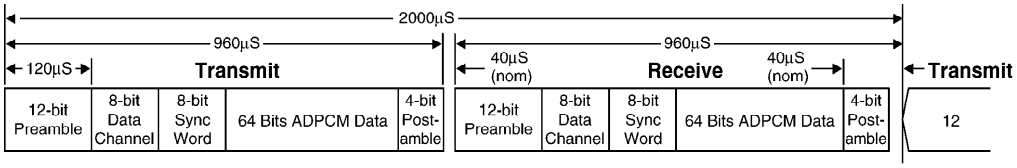


10.2.1. TDD Frame Format

The TDD frame is 2mS in length, and is composed of two symmetrical 960 μ S TX and RX subframes. Each subframe contains 96 bits of 10 μ S duration, with 40 μ S guard times between both TX and RX subframes.
Each subframe consists of the following five fields:

- **A 12-bit Preamble field**
- **An 8-bit Data Channel field**
- **An 8-bit Sync Word**
- **A 64-bit ADPCM Payload**
- **A 4-bit Post-amble**

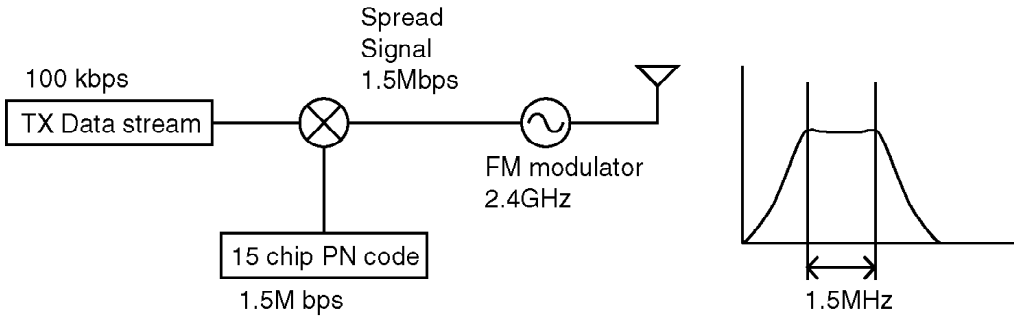
Both the 8-bit sync word and 8-bit data channel are programmable via the DSP interface. In addition, the 64-bit payload can be filled either with ADPCM voice data, or can be used by the host DSP as a fast data channel between base and handset.



10.3. Spread Spectrum

Transmission and reception are operated using the spread spectrum method.
DSS (Digital Spread Spectrum)
Mixing the original signal with the pseudo random noise code (PN code) works the spread spectrum. In this system PN code is 15 chip. Although the band width is spread fifteen times, the power level per channel becomes lower.

Fig. 8



10.4. Signal Flowchart in the Whole System

Reception

CN101 of the base unit is connected to the TEL line, and the signal is input through the bridge diode D101. While talking the relay (Q121) is turned ON and amplified at the amplifiers Q461, then led to DSP (IC501). DSP generates ADPCM signal. The ADPCM signal is input to RFIC (IC101) of RF UNIT, and is mixed with pseudo random noise code (PN code) to spread the spectrum. RFIC outputs FSK modulated RF signal. The RF signal is passed through the balun (T101) and filter (L107) to the T/R switch (IC109). And the RF signal amplifies by the power amplifier (IC105) and fed into T/R switch (IC110) and passes through filter (L106) to Diversity ANTENNA. As for the handset, RF signal from the antenna passes through filter (L106) and switch by T/R switch (IC110) to LNA (IC106). The RF signal is amplified by LNA (IC106) and switched by T/R switch (IC109) and input to RFIC passing through filter (L107) and the balun (T101) to perform the de-spread, then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal, then it is output to the speaker.

Transmission

The voice signal input from the microphone is led to DSP (IC201). The DSP generates ADPCM signal. As well as the reception, it is converted into the RF signal by RFIC (IC101). Passing through the balun (T101) and filter (L107), to the T/R switch (IC109). And the RF signal amplifies by the power amprifier (IC105) and fed into T/R switch (IC110) and passes through filter (L106) to ANTENNA. As for the base unit, RF signal from the Diversity antenna passes through filter (L106) and switch by T/R switch (IC110) to LNA (IC106). The RF signal is amplified by LNA (IC106) and switched by T/R switch (IC109) and is input to RFIC (IC101) passing through filter (L107) and the balum (T101) to perform the de-spread, then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal. The voice signal is amplified at the TX amplifier (Q131), then output to the TEL line (CN101) through the relay (Q121) and bridge (D101).

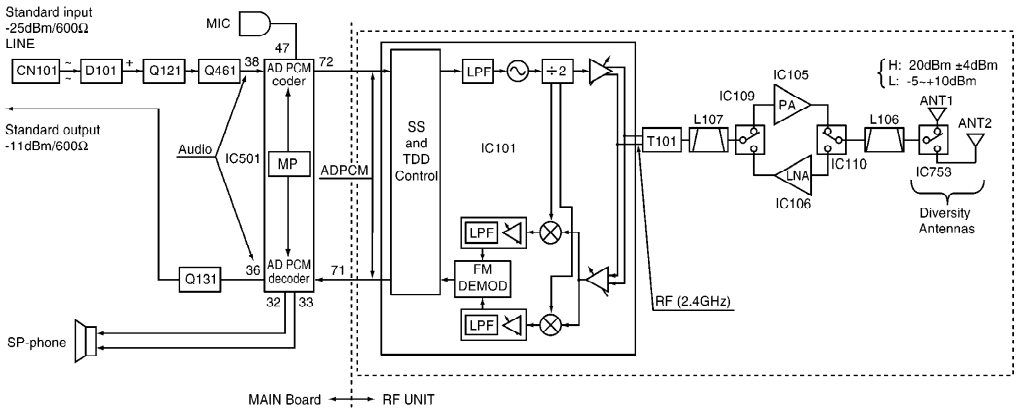


Fig. 9-1 BASE UNIT

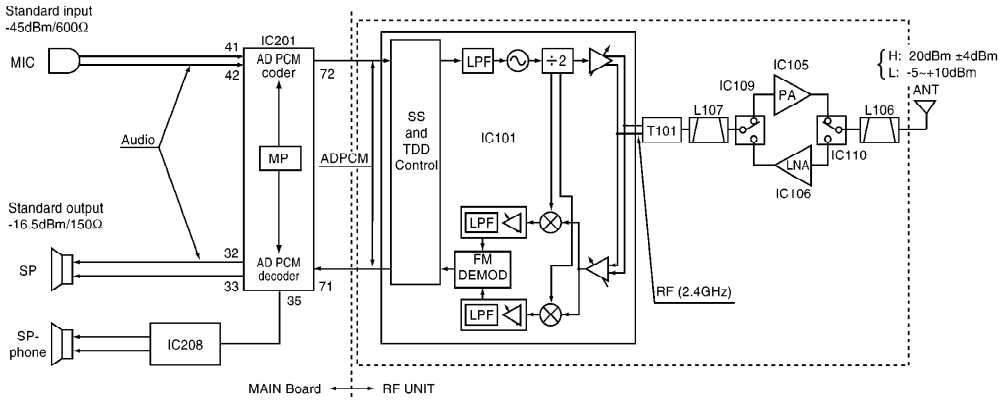
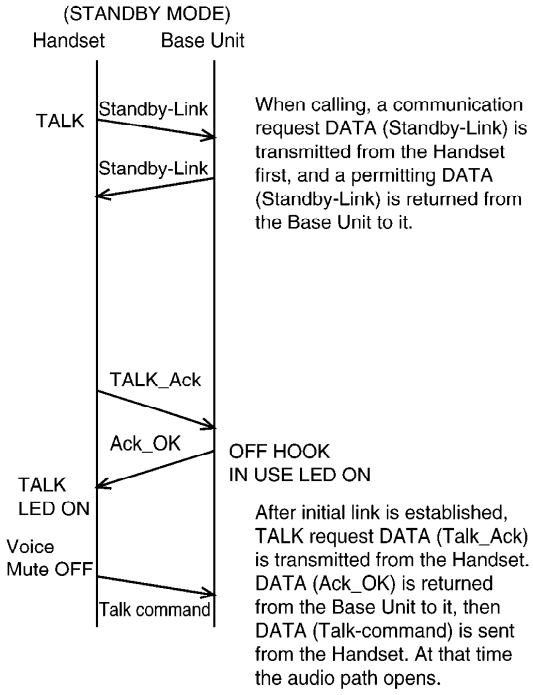


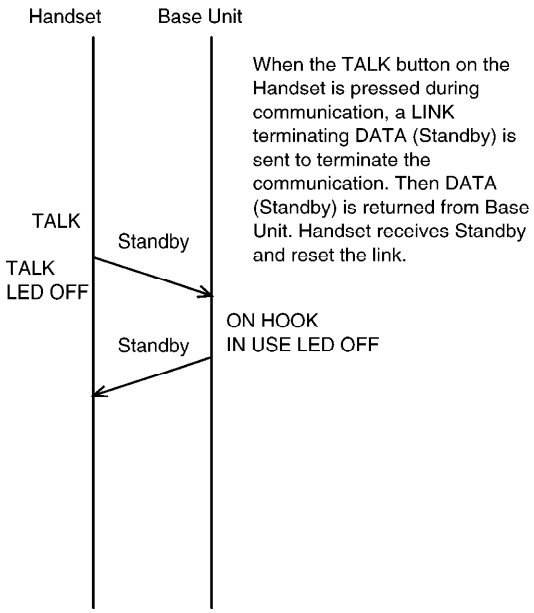
Fig. 9-2 HANDSET

10.5. EXPLANATION OF DSP DATA COMMUNICATION

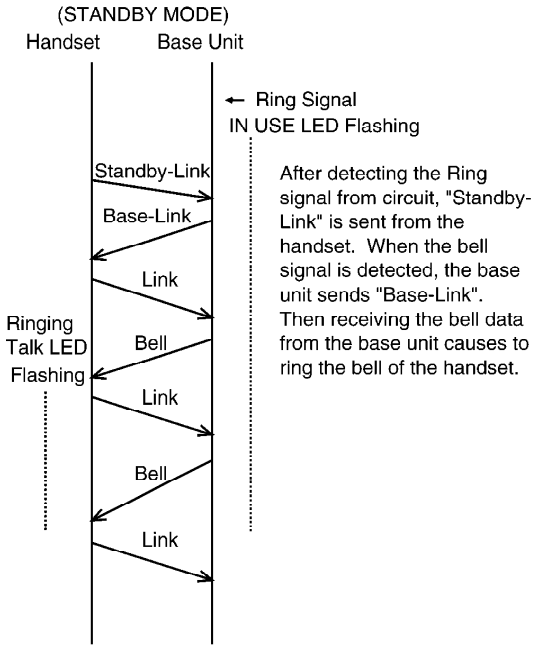
10.5.1. Calling


(STANDBY MODE)
Handset
Base Unit
TALK
Standby-Link
Standby-Link
When calling, a communication request DATA (Standby-Link) is transmitted from the Handset first, and a permitting DATA (Standby-Link) is returned from the Base Unit to it.
TALK_Ack
Ack_OK
OFF HOOK
IN USE LED ON
TALK
LED ON
Voice
Mute OFF
After initial link is established, TALK request DATA (Talk_Ack) is transmitted from the Handset. DATA (Ack_OK) is returned from the Base Unit to it, then DATA (Talk-command) is sent from the Handset. At that time the audio path opens.
Talk command

10.5.2. To Terminate Communication

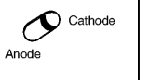
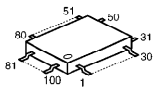
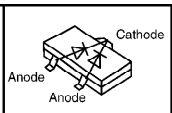
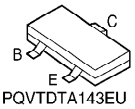
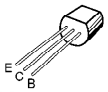
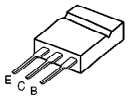
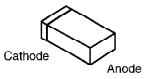
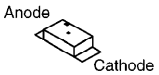
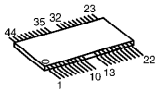
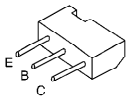
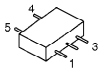
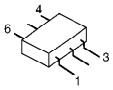

Handset
Base Unit
When the TALK button on the Handset is pressed during communication, a LINK terminating DATA (Standby) is sent to terminate the communication. Then DATA (Standby) is returned from Base Unit. Handset receives Standby and reset the link.
TALK
Standby
TALK
LED OFF
ON HOOK
IN USE LED OFF
Standby

10.5.3. Ringing

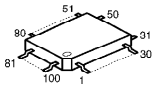
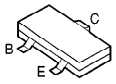
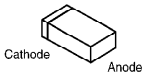
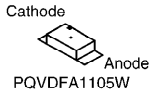
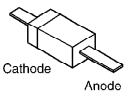

(STANDBY MODE)
Handset
Base Unit
← Ring Signal
IN USE LED Flashing
Standby-Link
After detecting the Ring signal from circuit, "Standby-Link" is sent from the handset. When the bell signal is detected, the base unit sends "Base-Link". Then receiving the bell data from the base unit causes to ring the bell of the handset.
Base-Link
Link
Ringing
Talk LED
Flashing
Bell
Link
Bell
Link

11. TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

11.1. Base Unit

 PQVDRLZ2R0 PQVDRLZ20A	 PQVI16569ADA	 MA153	2SD1758Q	 PQVTDTA143EU PQVTDTC143E PQVTDTC114EU, UN5213 2SD1819A, 2SD601A	PQVIXCF4502P PQVITC7W74U
 2SC2120, PQVT2N6517CA, 2SA1625	 2SD2136	PQVDS1ZB60F1	 PQVDHRU0302A MA8047, MA8043, MA8033, MA111, MA8051, MA8036H, MA8220		PQVTXP132A11
 PQVDSS24	 PQWITG2670NH	 2SD1994A	PQVIPS3432UT	2SD1664Q	PQVINJM2360M
 PQVITC7S08FU	 PQVISPM3204T				

11.2. Handset

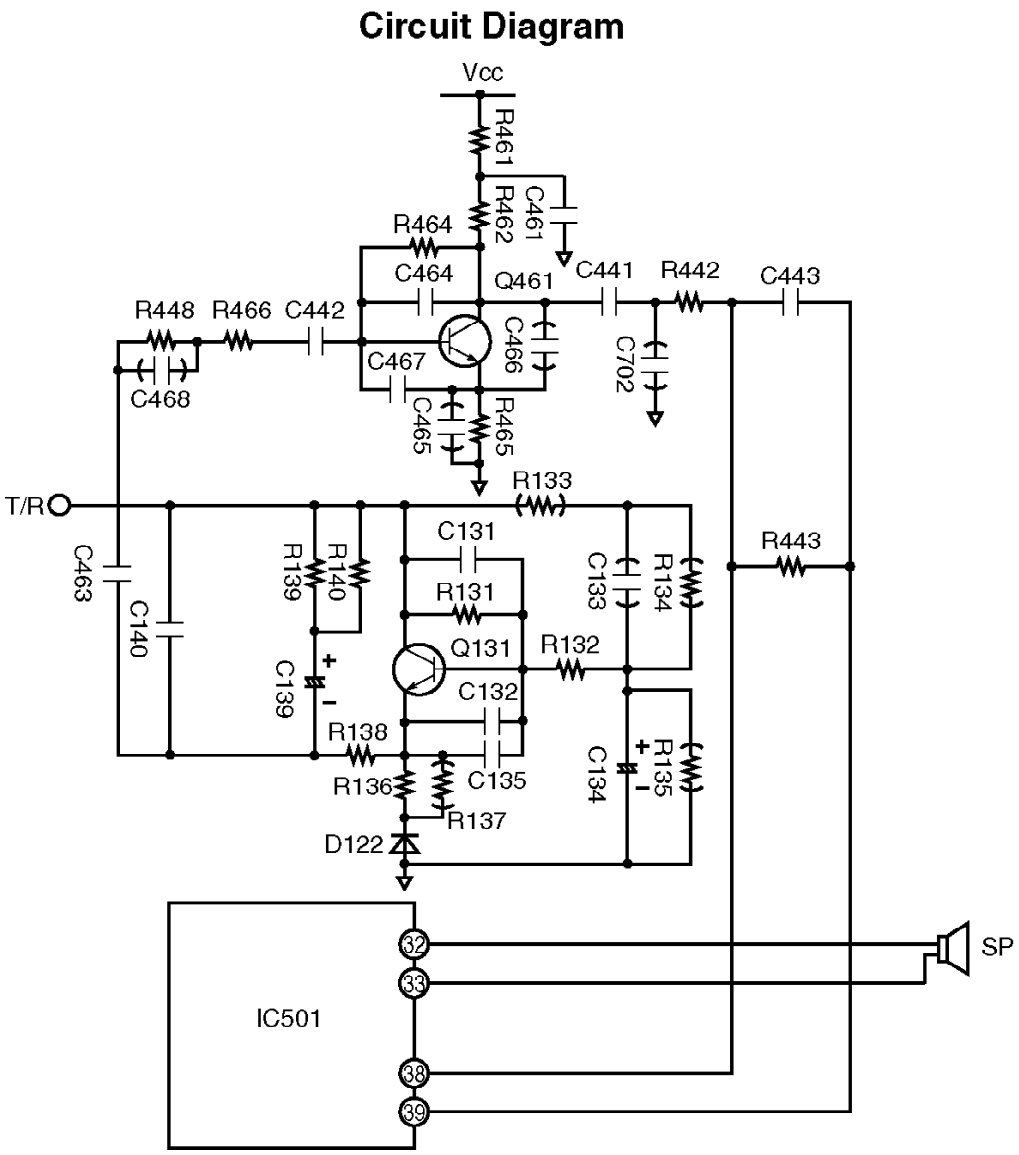
 PQVI16107AFA	 PQVTXP151AB, PQVTDTC143E, PQVDTA143TU, 2SD1819A,	 LNJ211R8ARU MA2ZD1400 MA8150, MA111	 PQVDFA1105W PQVDHPY1105W PQVDSML310MT PQVDBR1111C	PQWITG2670NR PQVINJM2135R
PQVIC61CC22N PQVIC61CC20N	2SA1797Q	LNJ115W89RA	PQVIC68B102M PQVDEP10LA03 PQVIXCR3302M PQVIMM1385EN	 PQVDEC10 PQVDPTZTE25

12. BLOCK DIAGRAM (Base Unit)

13. CIRCUIT OPERATION (Base Unit)

13.1. SP-PHONE RX Circuit

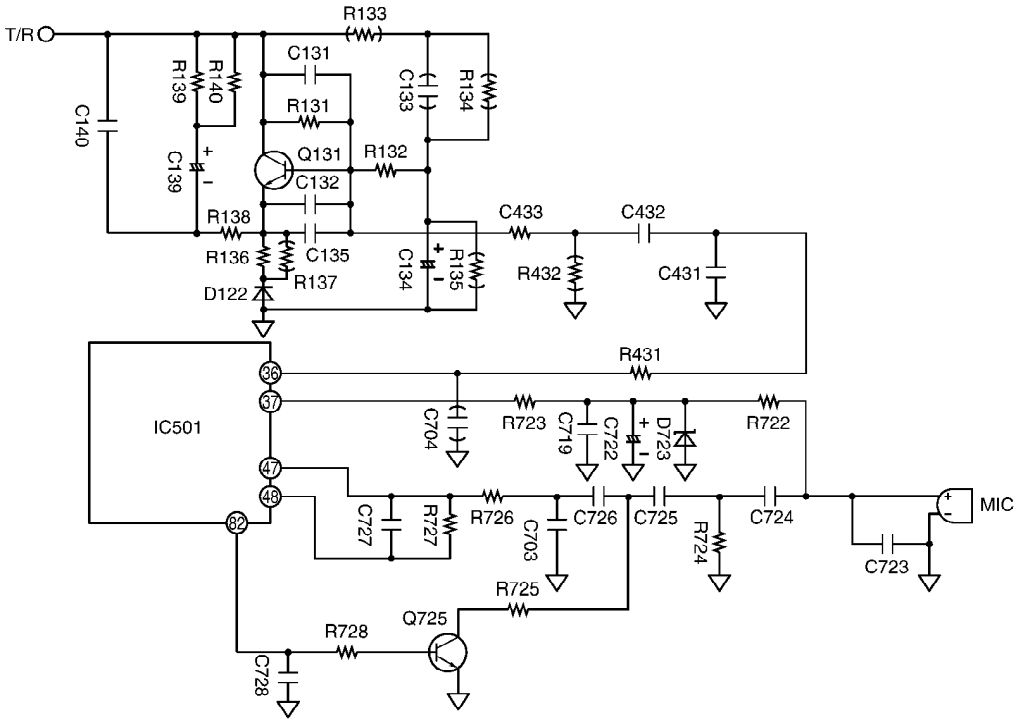
Circuit Operation: / Telephone Line (T/R) → Q131 → C463 → R448 → C442 → R464 → C441 → pin 38 of IC501 → pins 32 and 33 of IC501 → Speaker



13.2. SP-PHONE TX Circuit

Circuit Operation: / MIC → C724 → C725 → C726 → R726 → pin 47 of IC501 → pin 36 of IC501 → R431 → C432 → C433 → Telephone Line

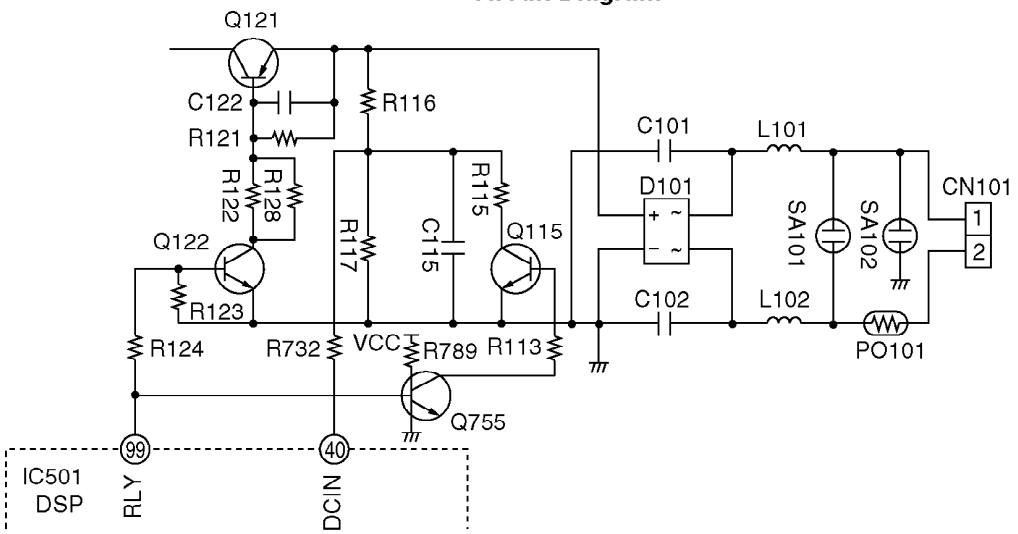
Circuit Diagram



13.3. Auto Disconnect Circuit

Function: / This circuit is used to detect the fact that another telephone connected to the same line is OFF-HOOK while the unit is in a receiving status or OGM transmitting status.
Circuit Operation: / The voltage pin 40 of IC501 is monitored. If a parallel-connected telephone is put into an OFF HOOK status, the presence/absence of a parallel connection is determined when the voltage changes by 0.2V or more. / When the set detects the parallel-connected telephone is OFF HOOK status, the line is disconnected.

Circuit Diagram



13.4. Power Supply Circuit with DC-DC Converter

Function: / Power from the AC adaptor passes through a DC-DC converter consisting of Q302, L302, D302 and IC302.

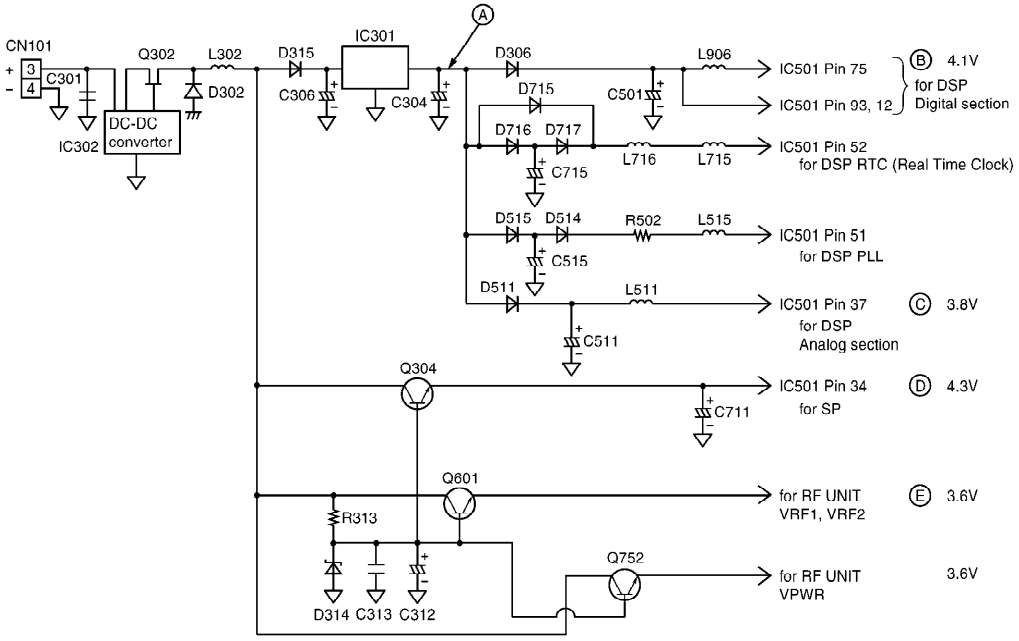
DC-DC converter down convert from 9V to 6.1V to get more current with low power loss and low heat radiation.

Circuit Operation: / IC301 is a regulated power supply. The voltage at point A is regulated to 4.5 V by IC301. / The voltage at point B is dropped by D306 to 4.1 V. / The voltage at point C is dropped by D511 to 3.8 V.

The voltage at point D is dropped by Q304 to 4.3V

The voltage at point E is dropped by Q601 to 3.6V

Circuit Diagram



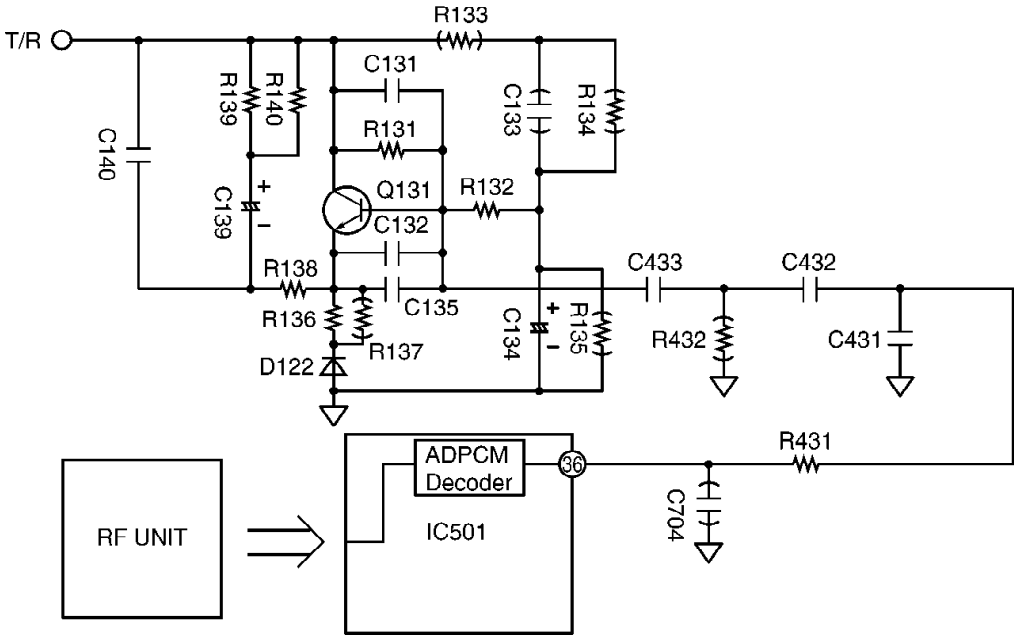
13.5. DTMF Signal

When the DTMF data from the Handset is received, the DTMF signal is output from pin 36 of IC501 and sent to the line through Q131.

13.6. Line Sending Signal

The coded signal input from the RF unit is decoded by IC501. / The audio signal output from IC501-36 and is input to telephone line.

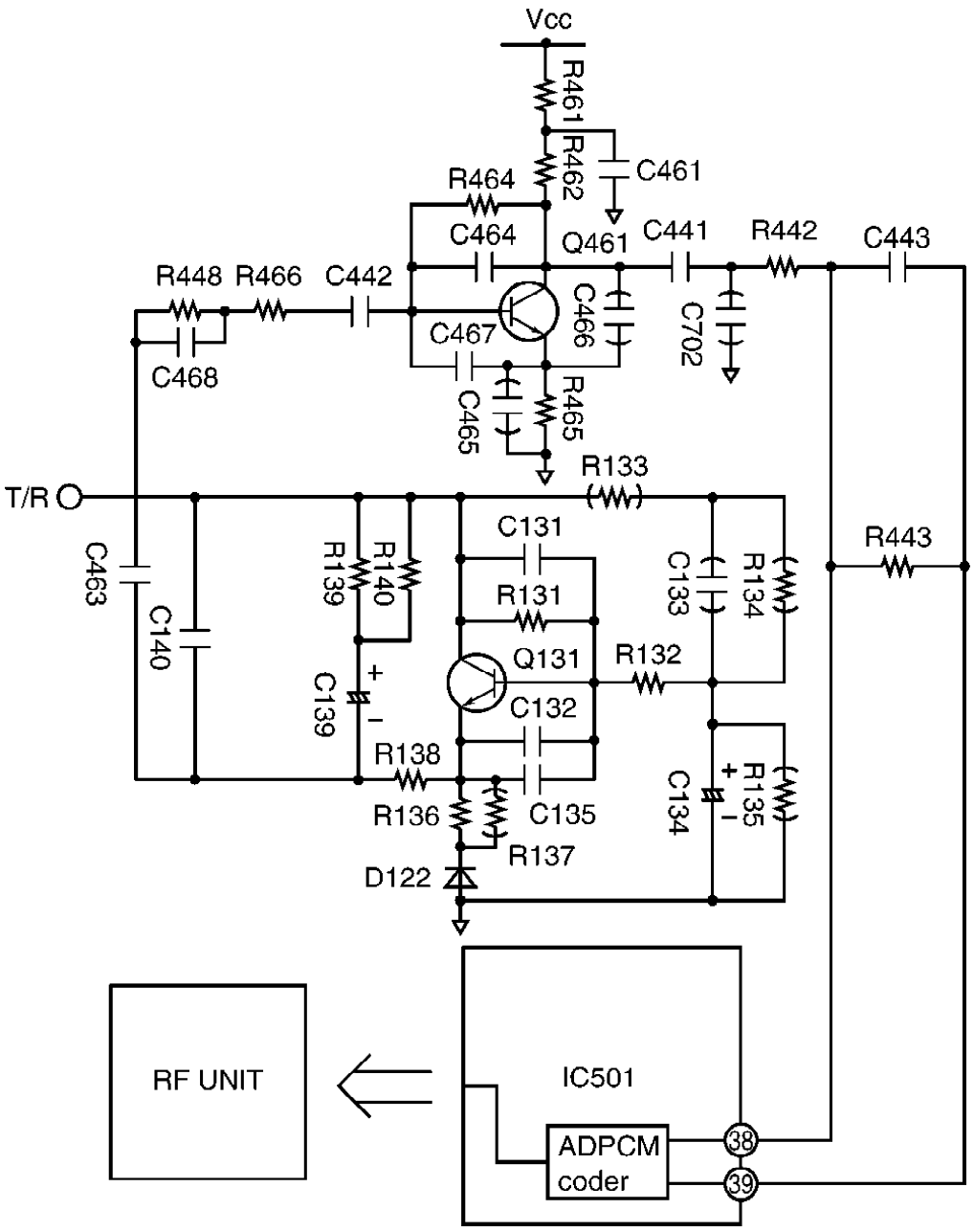
Circuit Diagram



13.7. Line Receiving Signal

The audio signal from line passes through Q131 and Q461 to pin38 and 39 of IC501(DSP). IC501 modulates this input audio signal to output to the RF unit.

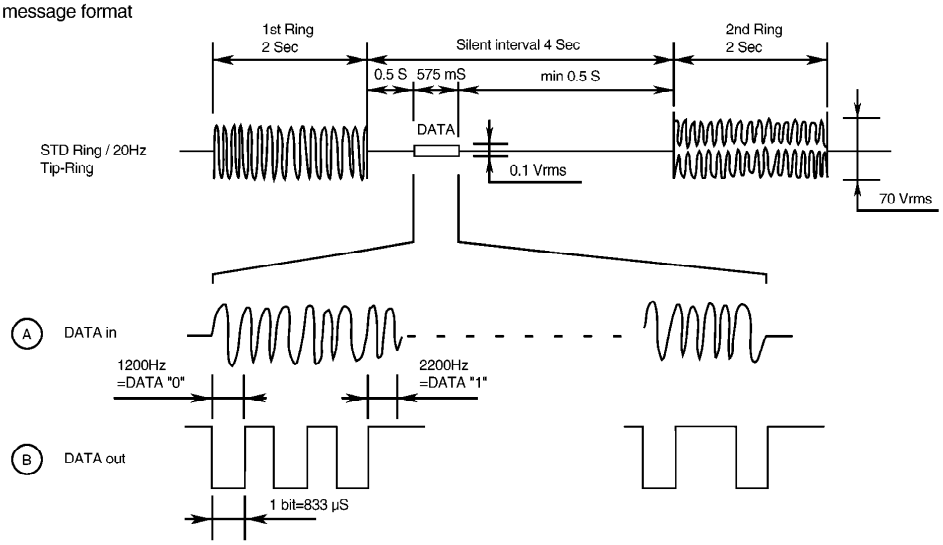
Circuit Diagram



13.8. Calling Line Identification Circuit (Caller ID)

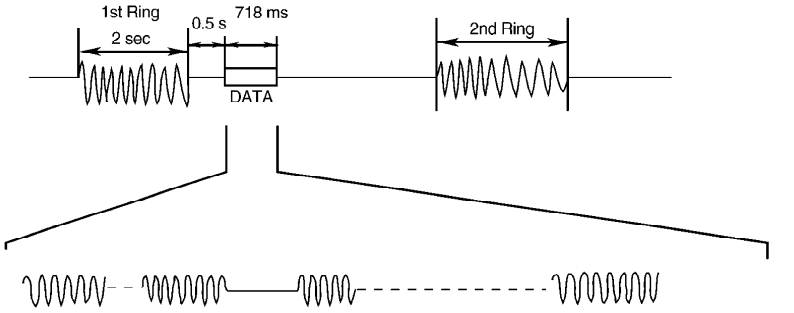
Function: / The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used. / The data for the caller ID from the telephone exchange is sent during the interval between the first and second rings of the bell signal. The data from the telephone exchange is a modem signal which is modulated in an FSK (Frequency Shift Keying) format. Data "0" is a 1200 Hz sine wave, and data 1 a 2200 Hz sine wave. / There are two type of the message format which can be received: i.e. the single message format and plural message format. The plural message format allows to transmit the name and data code information in addition to the time and telephone number data.

● Single message format



month	day	hour	minute	number
04	15	16	35	2013487000

● Plural message format



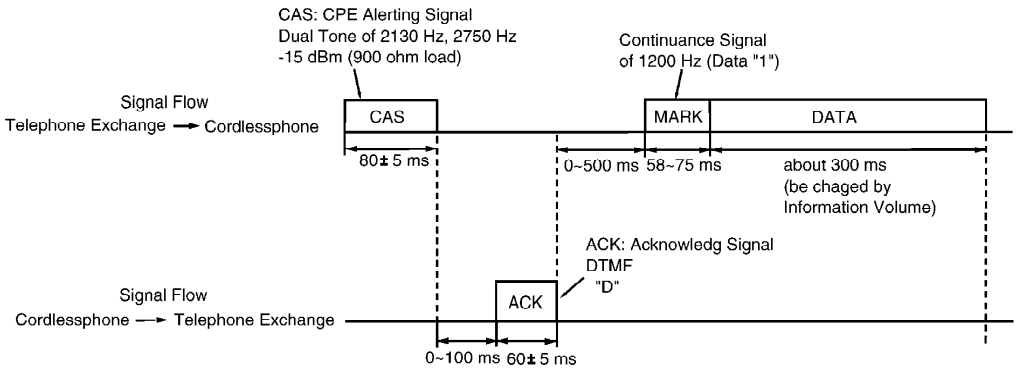
DATA CODE	NAME
201	John Smith

month	day	hour	minute	number
04	16	16	35	2013487000

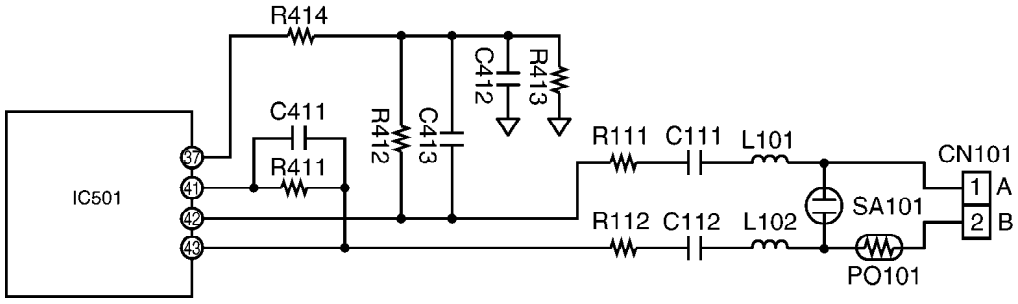
● Call Waiting / Calling Identity Delivery on Call Waiting (CIDCW) is a CLASS service that allows a customer, while off-hook on an existing call, to receive information about a calling party on a waited call. The transmission of the calling information takes place almost immediately after the customer is alerted to the new call so he/she can use this information to decide whether to take the new call.

Function: / The CAS signal flows from T/R → R111, R112 collector → C111, C112 → IC501 pins 41~43 and the ACK (DTMF signal) is returned to the telephone exchange. The telephone exchange that received the ACK can send the data in the same manner as the caller ID. If the unit deems that a telephone connected in parallel is in use, ACK is not returned even if CAS is received, and the information for the second and subsequent callers is not displayed on the portable handset display.

Call Waiting Format



Circuit Diagram



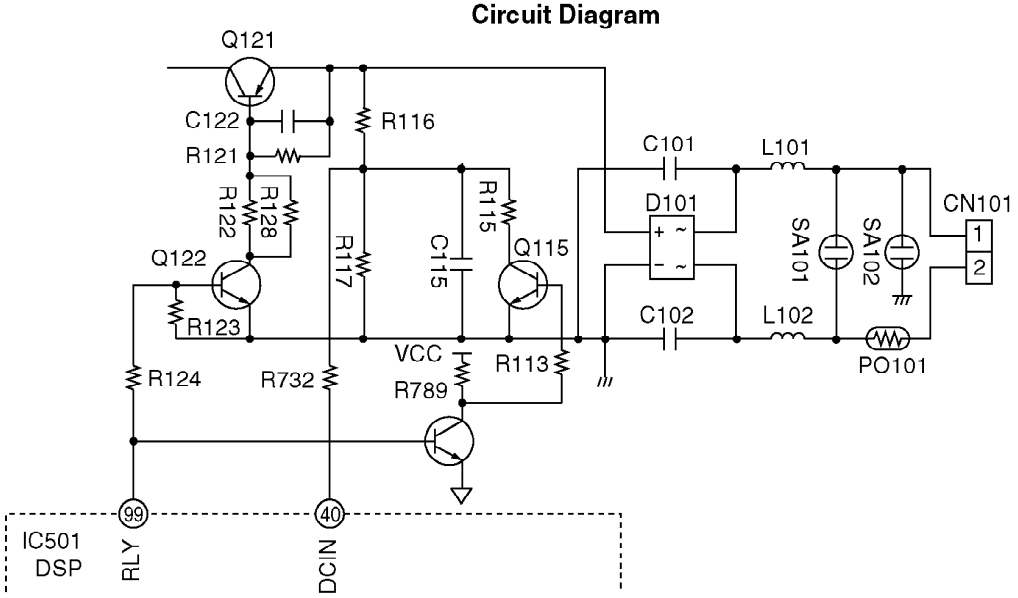
13.9. Parallel Connection Detection Circuit

Function: / In order to disable call waiting and stutter tone functions when using telephones connected in parallel, it is necessary to have a circuit that judges whether a telephone connected in parallel is in use or not. This circuit determines whether the telephone connected in parallel is on hook or off hook by detecting changes in the T/R voltage.

Circuit Operation: / Parallel connection detection when on hook: / When on hook Q115 is ON, the voltage is monitored pin 40 of IC501. There is no parallel connection if the voltage is 1.65 V or higher, while a parallel connection is deemed to exist if the voltage is lower.

Parallel connection detection when off hook: / When off hook Q115 is OFF, the voltage is monitored pin 40 of IC501; the presence/absence of a parallel connection is determined when the voltage changes by 0.2 V or more.

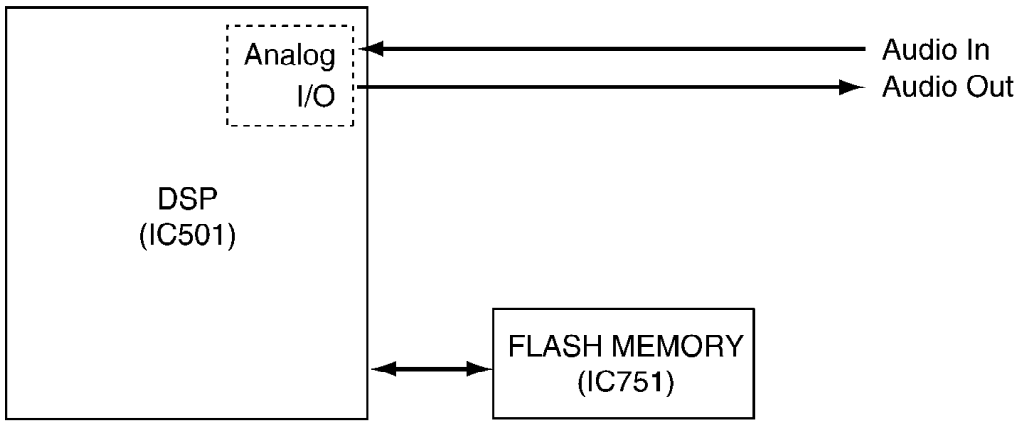
Circuit Diagram



13.10. DSP (Digital Speech/Signal Processing) Circuit

General Description: / (IC501, IC751) is a digital speakerphone/speech/signal processing system that implements all the functions of speech compression, record and playback, and memory management required in a digital telephone answering machine. / The DSP system is fully controlled by a host processor IC501. The host processor provides activation and control of all that functions, such as speech Recording, Playback, Tone detecting and Line monitoring.
The DSP system comprises of following. / — a Host Processor.
— a Digital Signal Processor which includes the firmware implemented functions.
— a FLASH MEMORY (IC751), which is used for stored voice messages and synthesized voice.

Circuit Diagram



- Voice Message Recording / The DSP system use a proprietary speech compression technique to record and store voice message in FLASH MEMORY (IC751). / An error correction algorithm is used to enable playback of these messages from the FLASH MEMORY (IC751).

- DTMF Detection / The DTMF detection is implemented by the DSP

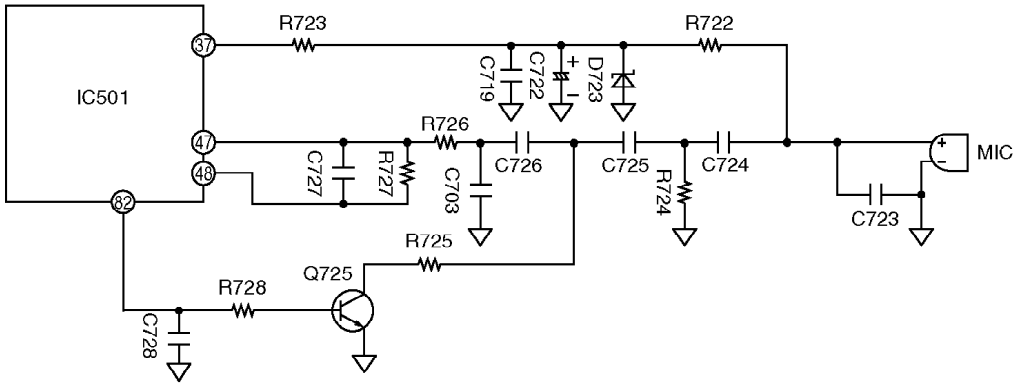
system in software. The DTMF detection is performed during Record, Playback, and Line Monitoring modes of operation.

- Synthesized Voice / The DSP implements synthesized Voice, utilizing the built in speech detector and an FLASH MEMORY (IC751), which stored the vocabulary.
- Caller ID and Call Waiting CID demodulation / The DSP implements monitor and demodulate the FSK signals that provide CID information from the Central Office.

13.11. Greeting Recording Circuit

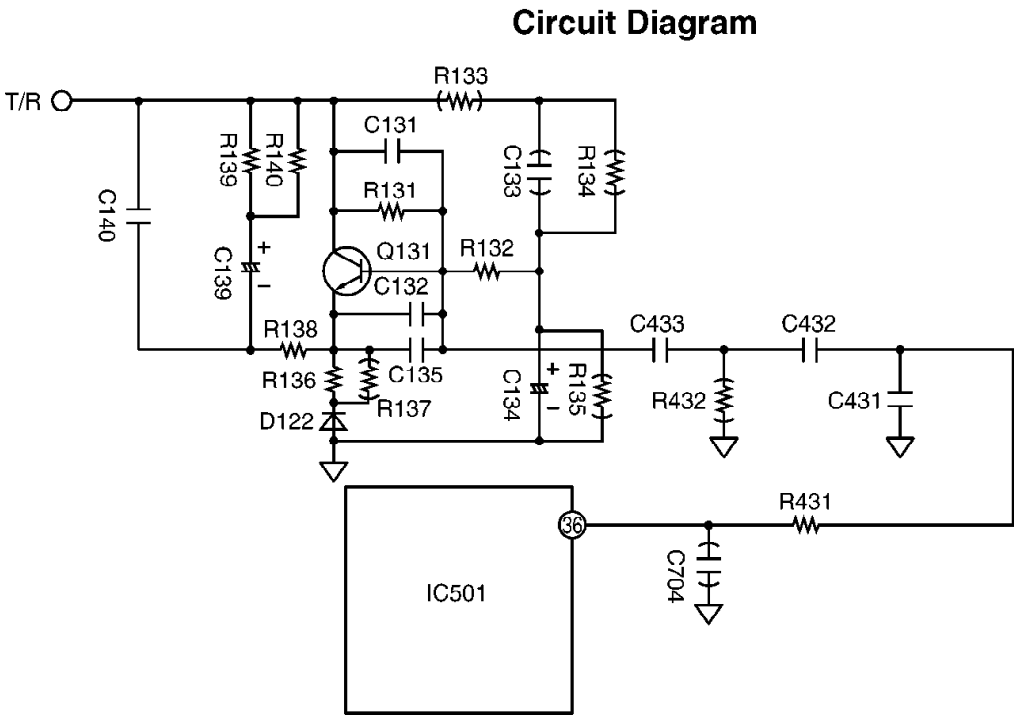
Circuit Operation: / MIC → C724 → C725 → C726 → R726 → pin 47 of IC501.
When Pin82 of IC501 is "high" TX audio from MIC is muted.

Circuit Diagram



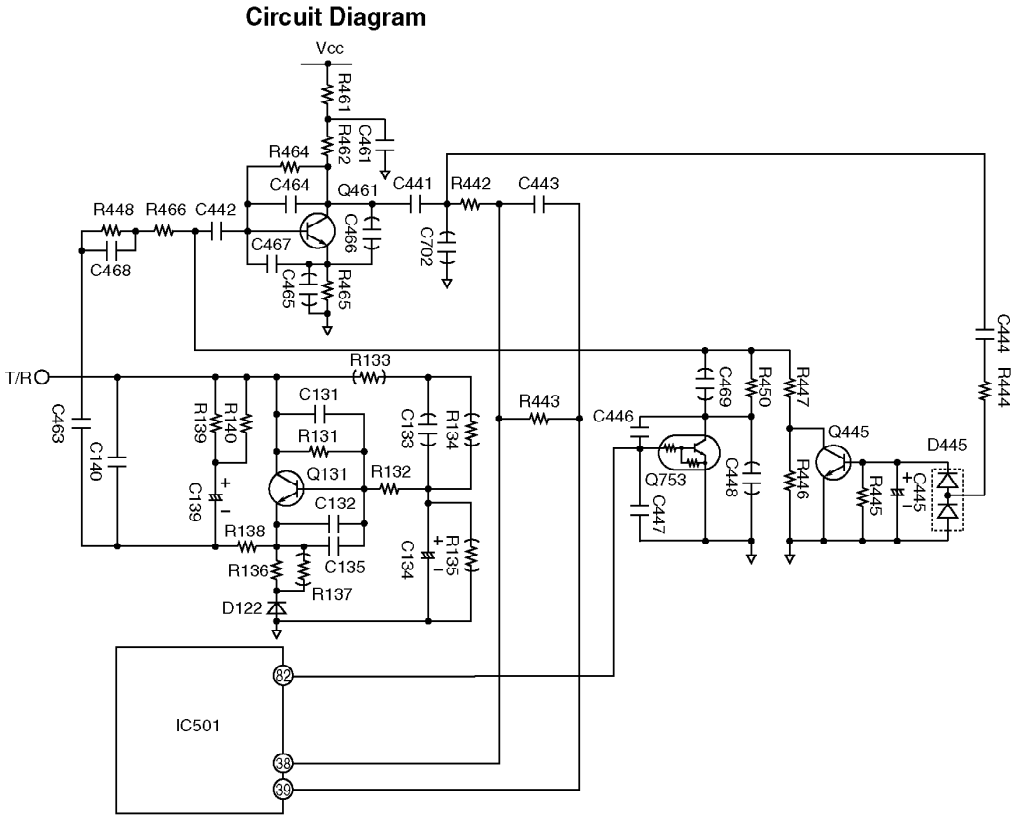
13.12. Greeting Play Back Circuit

Circuit Operation: / pin36 of IC501 → R431 → C432 → C433 → Telephone Line.



13.13. ICM Recording Circuit

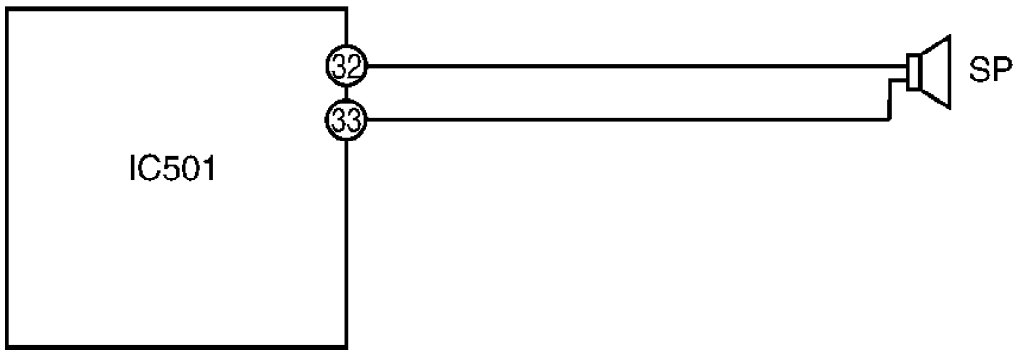
Circuit Operation: / Telephone Line → Q131 → C463 → R448 → C442 → R464 → C441 → pin 38 and 39 of IC501.



13.14. ICM Play Circuit

Circuit Operation: / pins 32 and 33 of IC501 → Speaker.

Circuit Diagram

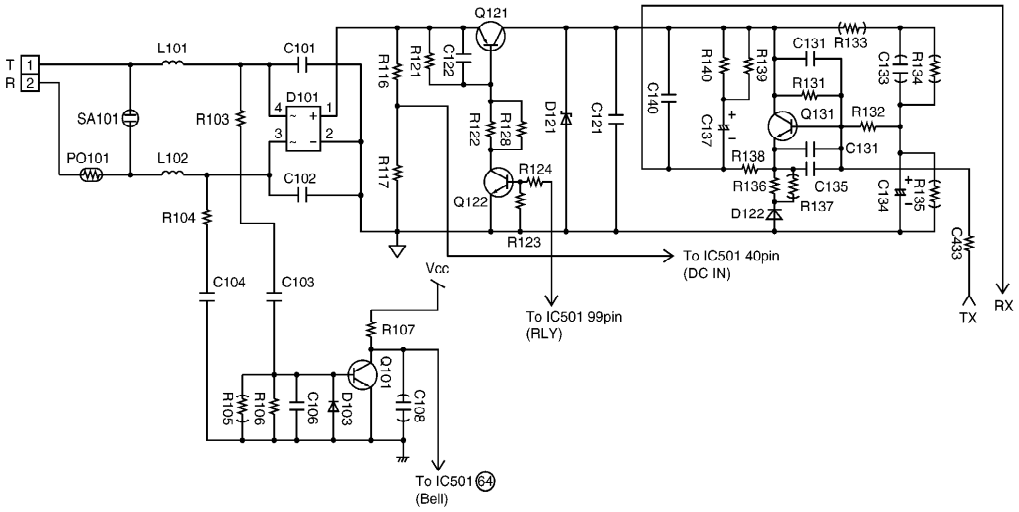


13.15. Telephone Line Interface

Circuit Operation:

- **ANSWER / In the idle mode, Q121 is open to cut the DC loop current and decrease the ring load. When ring voltage appears at the Tip (T) and Ring (R) leads (When the telephone rings), the AC ring voltage is transferred as follows: / T → L101 → R103 → C103 → Q101 → IC501 pin 64. / When the CPU (DSP) detects a ring signal, Q121 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the voice signal. / T → D101 → Q121 → Q131 → R138 → C140 → D101 → L102 → PO101 → R**
- **ON HOOK / Q121 is open, Q121 is connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an on-hook condition.**
- **SPECIFICATIONS / In the on-hook state (idle), the current flows between the telephone line and the unit is as follows: / T → L101 → R103 → C103 → R106 → C104 → R104 → L102 → PO101 → R. / The DC component is blocked by C103, C104: thereby providing an on-hook condition. / The AC interface impedance is over 47 k Ω ; thus, satisfying the telephone company requirements.**

Circuit Diagram



13.16. Intercom Mode

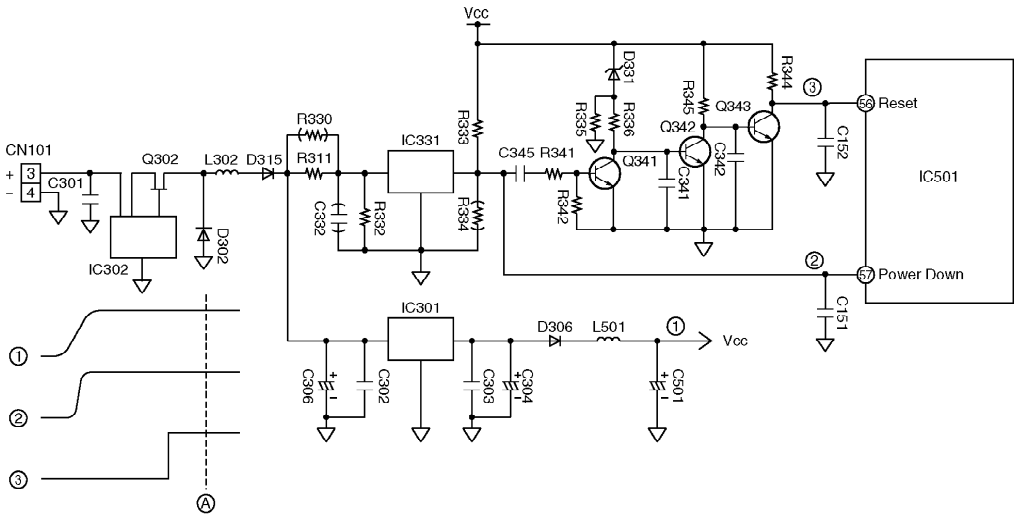
1. **When the base unit LOCATOR/INTERCOM button is pressed, a call monitor signal (intercom sound) is output from pins 32 and 33 of IC501. Thus a monitor tone is heard from the speaker.**
2. **“Paging” is displayed on LCD. This status is called “Intercom stand-by”.**
3. **The receiving signal flows: / RF → pin 32 and 33 of IC501 → SP**
4. **The transmission signal flows: / MIC → C724 → C725 → C726 → R726 → pin 47 of IC501 → RF**

13.17. Initializing Circuit

Function: / This circuit is used for to initialize the microcomputer when it incorporates an AC adaptor.

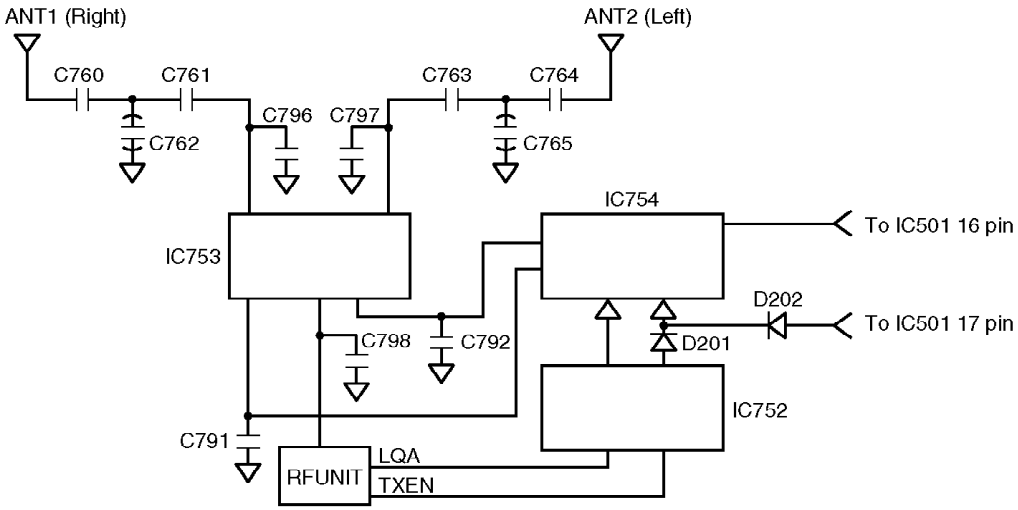
Circuit Operation: / When the AC Adaptor is inserted into the unit, then the voltage is shifted by IC301, D306 and power is supplied to the DSP. / The set can operate beyond point A in the circuit voltage diagram.

Circuit Diagram



13.18. Antenna Diversity

Antenna Diversity improve conversation quality. This means to reduce some noise during conversation. RF unit send LQA (Link Quality Alarm) signal to IC754 when detecting weak RF signal. Then IC754 control RF switch IC753 to switch another Antenna.



14. BLOCK DIAGRAM (Handset)

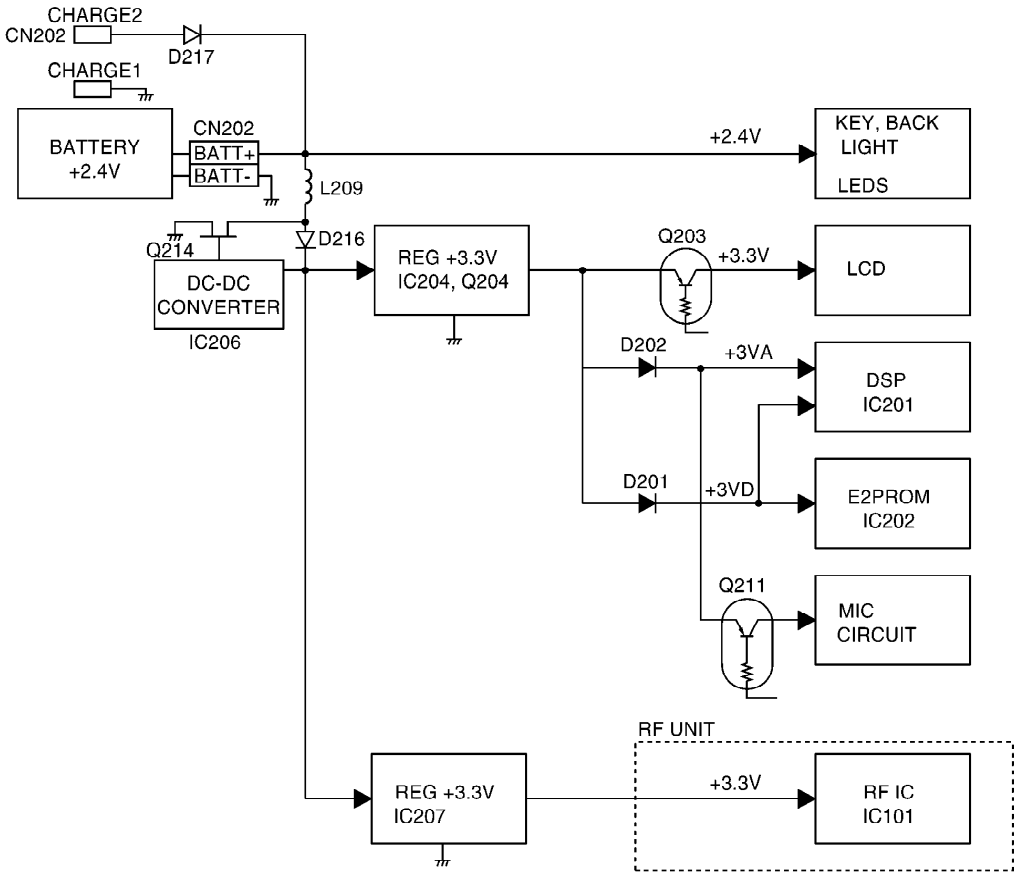
15. CIRCUIT OPERATION (Handset)

15.1. Power Supply Circuit (DC-DC Converter)

Voltage is supplied separately to each block.

DC-DC converter is consisted in IC206, Q214, D216 and L209. DC-DC converter upconvers from 2.4V to 3.6V using two cell Ni-MH battery.

Block Diagram (Handset Power)

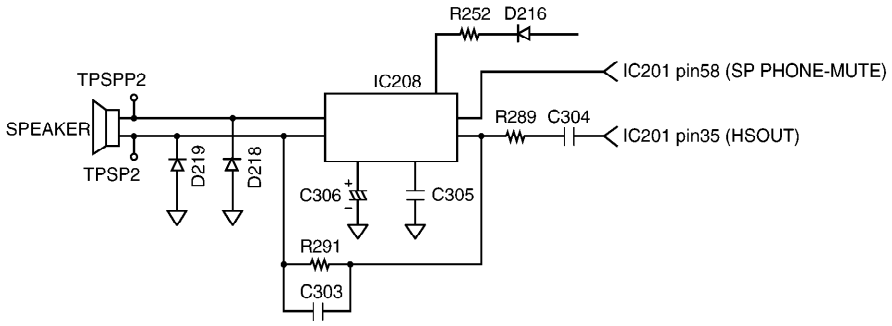


15.2. Charge Circuit

Ni-MH battery is connected to CN202. When the handset is put on the cradle of the base unit, the power is supplied from CHARGE1 and CHARGE2 terminals to charge the battery. Q207 detects the voltage of CHARGE1 and CHARGE2 terminals, then the handset makes ID code setting (*) with the base unit.

15.3. Ringer and SP-Phone Circuit

TG2670N has SP-phone for hands free operation TG2670N also uses this SP-Phone speaker for Ringer. Press key to use SP-Phone. Then received signal output is switched to pin35 of IC201(DSP). This output signal is amplified by IC208, and fed into speaker. When ringer beeping, ringer signal is also output from pin35 of IC201(DSP). After that, same as above.

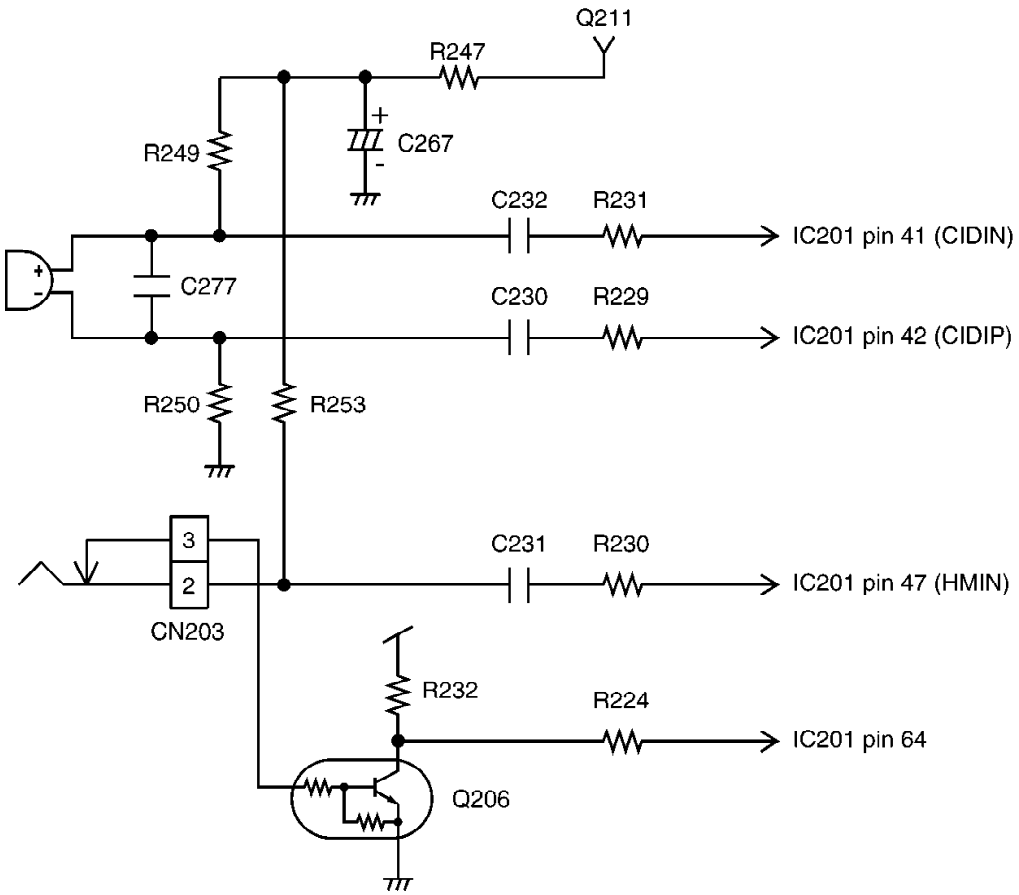


15.4. Sending Signal

The voice signal from the microphone input to pin 42 (CIDIP) and pin 41(CIDIN) of IC201 (DSP). CN203 is the headphone jack. When the headphone is connected, the Q206 detect it. The input

from the microphone of the handset (CIDIN, CIDIP) is cut and the microphone signal from the headphone is input to pin 47 of IC201 (HMIN). Also the power for the microphone is supplied from Q211, and the power is turned OFF on standby.

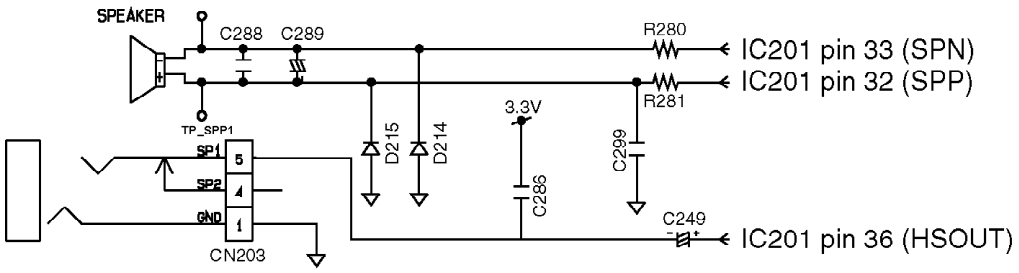
Circuit Diagram



15.5. Reception Signal Circuit

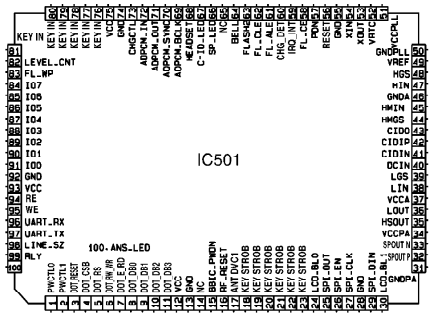
The received signal from the base unit is output from pins 33 (SPN) and 32 (SPP) of IC201 (DSP) as the voice signal. SPN is the inverse output of SPP, and the speaker is driven by SPN and SPP. CN203 is the headphone jack. When the headphone is connected to this jack, the output to the speaker of the handset (SPN,SPP) is cut and the voice signal is output to the headphone (HSOUT) only.

Circuit Diagram



16. CPU DATA (Base Unit)

16.1. IC501

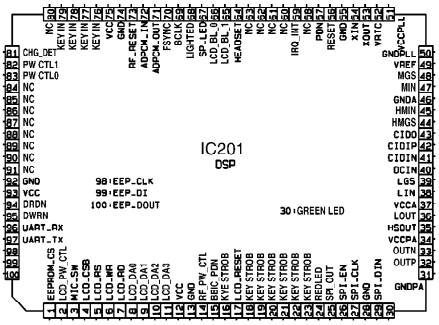


Pin	Description	I/O	High	High_Z	Low
1	PWCTL0	D.O	pin2=Hi-Z:HighPower pin2=L:-	-	pin2=Hi-Z:LowPower pin2=L:SuperLowPower
2	PWCTL1	D.O	-	pin1=H:HighPower pin1=L:LowPower	pin1=H:- pin1=L:SuperLowPower
3	DOT_RESET	D.O	Normal	-	Reset
4	DOT_CSB	D.O	Not	-	Active
5	DOT_RS	D.O	Data	-	Instruction
6	DOT_RW_WR	D.O	Read	-	Write
7	DOT_E_RD	D.O	Active	-	Not
8	DOT_DB0	D.O	High	-	Low
9	DOT_DB1	D.O	High	-	Low
10	DOT_DB2	D.I	High	-	Low
11	DOT_DB3	D.O	High	-	Low
12	VCC	VCC	Vcc	-	-
13	GND	GND	-	-	GND
14	NC	D.O	-	-	Normal
15	BBIC_PWDN	D.O	Not	-	Active
16	RF_RESET	D.O	Normal	-	Reset
17	ATN DVC1	D.O	High	-	Low
18	KEY STROB	D.O	Active	Not	-
19	KEY STROB	D.O	Active	Not	-
20	KEY STROB	D.O	Active	Not	-
21	KEY STROB	D.O	Active	Not	-
22	KEY STROB	D.O	Active	Not	-
23	KEY STROB	D.O	Active	Not	-
24	LCD BLO	D.O	Off	-	On
25	SPI_OUT	D.O	High	-	Low
26	SPI_EN	D.O	Not	-	Active
27	SPI_CLK	D.O	High	-	Low
28	GND	GND	-	-	GND
29	SPI_DIN	D.I	High	-	Low
30	LCD_BL1	D.O	Off	-	On
31	GNDPA	GND	-	-	GND
32	SPOUT P	A.O	-	-	-
33	SPOUT N	A.O	-	-	-
34	VCCPA	VCC	VCC	-	-
35	HSOUT	A.O	-	-	-
36	LOUT	A.O	-	-	-
37	VCCA	VCC	VCC	-	-
38	LIN	A.I	-	-	-
39	LGS	A.O	-	-	-
40	DCIN	A.I	-	-	-
41	CIDIN	A.I	-	-	-
42	CIDIP	A.I	-	-	-
43	CIDO	A.O	-	-	-
44	HMGS	A.O	-	-	-
45	HMIN	A.I	-	-	-
46	GNDA	GND	-	-	GND
47	MIN	A.I	-	-	-
48	MGS	A.O	-	-	-
49	VREF	A.O	-	-	-
50	GNDPLL	GND	-	-	GND

Pin	Description	I/O	High	High_Z	Low
51	VCCPLL	VCC	VCC	-	-
52	VRTC	VCC	VCC	-	-
53	XOUT	A.O	-	-	-
54	XIN	A.I	-	-	-
55	GND	GND	-	-	GND
56	RESET	D.I	Normal	-	Reset
57	PDN	D.I	Power On	-	Power Down
58	FL_CE	D.O	Not	-	Active
59	IRQ_INT	D.I	Normal	-	Interrupt
60	CHG_DET	D.I	Off Charge	-	On Charge
61	FL_ALE	D.O	Latch	-	Not
62	FL_CLE	D.O	Latch	-	Not
63	FLASH2	D.O	-	-	Normal
64	BELL	D.I	High	-	Low
65	NC	D.O	-	-	Normal
66	SP_LED	D.O	Off	-	On
67	C-ID_LED	D.O	Off	-	On
68	HANDSET	D.I	Headset In	-	Non
69	ADPCM_BCLK	D.I	High	-	Low
70	ADPCM_SYNC	D.I	High	-	Low
71	ADPCM_OUT	D.I	High	-	Low
72	ADPCM _IN	D.O	High	-	Low
73	CHG_CTL	D.O	-	Charge	Non Charge
74	GND	GND	-	-	GND
75	VCC	VCC	VCC	-	-
76	KEY IN	D.I	Key In	-	Non
77	KEY IN	D.I	Key In	-	Non
78	KEY IN	D.I	Key In	-	Non
79	KEY IN	D.I	Key In	-	Non
80	KEY IN	D.I	Key In	-	Non
81	KEY IN	D.I	Key In	-	Non
82	LEVEL_CNT	D.O	Not	-	Recording
83	FL_WP	D.O	Off	-	On
84	IO7	D.O	High	-	Low
85	IO6	D.O	High	-	Low
86	IO5	D.O	High	-	Low
87	IO4	D.O	High	-	Low
88	IO3	D.O	High	-	Low
89	IO2	D.O	High	-	Low
90	IO1	D.O	High	-	Low
91	IO0	D.O	High	-	Low
92	GND	GND	-	-	GND
93	VCC	VCC	VCC	-	-
94	RE	D.O	Active	-	Not
95	WE	D.O	Active	-	Not
96	UART_RX	D.I	High	-	Low
97	UART_TX	D.O	High	-	Low
98	LINE_SZ	D.O	On	-	Off
99	RLY	D.O	On	-	Off
100	ANS LED	D.O	Off	-	On

17. CPU DATA (Handset)

17.1. IC201

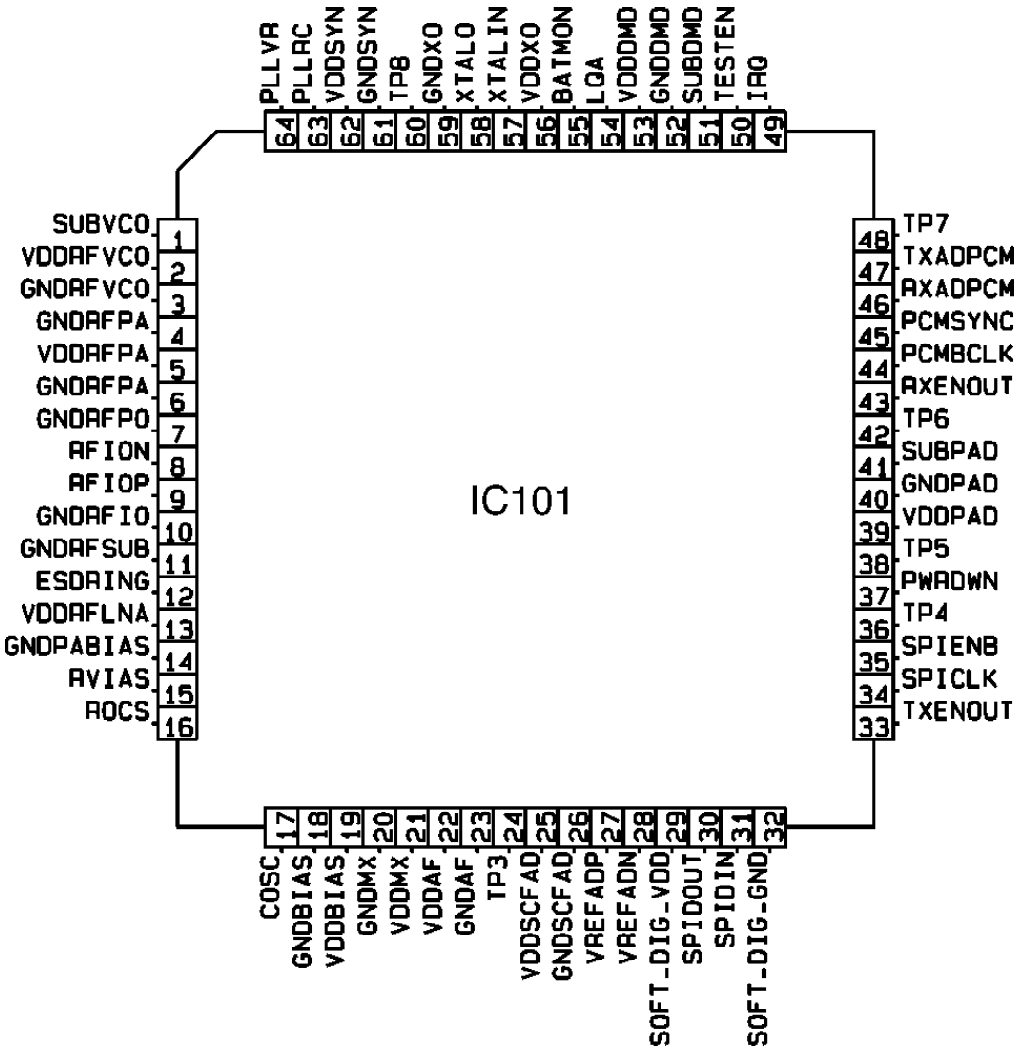


Pin	Description	I/O	High	High_Z	Low
1	EEPROM-CS	D.O	Active	-	Not
2	LCD_PW_CTL	D.O	Off	-	On
3	MIC_SW	D.O	Bias Off	-	Bias On
4	LCD_CSB	D.O	Not	-	Active
5	LCD_RS	D.O	Data	-	Instruct
6	LCD_WR	D.O	Read	-	Write
7	LCD_RD	D.O	Active	-	Not
8	LCD_DA0	D.O	High	-	Low
9	LCD_DA1	D.O	High	-	Low
10	LCD_DA2	D.O	High	-	Low
11	LCD_DA3	D.O	High	-	Low
12	VCC	VCC	Vcc	-	-
13	GND	GND	-	-	GND
14	RF_PW_CTL	D.O	Off	-	On
15	BBIC_PDN	D.O	Not	-	Active
16	KYE STROB	D.O	Active	Not	-
17	LCD_RESET	D.O	Not	-	Reset
18	KYE STROB	D.O	Active	Not	-
19	KYE STROB	D.O	Active	Not	-
20	KYE STROB	D.O	Active	Not	-
21	KYE STROB	D.O	Active	Not	-
22	KYE STROB	D.O	Active	Not	-
23	KYE STROB	D.O	Active	Not	-
24	RED LED	D.O	Off	-	On
25	SPI_OUT	D.O	High	-	Low
26	SPI_EN	D.O	Not	-	Active
27	SPI_CLK	D.O	High	-	Low
28	GND	-	-	-	GND
29	SPI_DIN	D.I	High	-	Low
30	GREEN LED	D.O	Off	-	On
31	GNDPA	GND	-	-	GND
32	OUTP	A.O	-	-	-
33	OUTN	A.O	-	-	-
34	VCCPA	VCC	VCC	-	-
35	HSOUT	A.O	-	-	-
36	LOUT	A.O	-	-	-
37	VCCA	VCC	VCC	-	-
38	LIN	A.I	-	-	-
39	LGS	A.O	-	-	-
40	DCIN	A.I	-	-	-
41	CIDIN	A.I	-	-	-
42	CIDIP	A.I	-	-	-
43	CIDO	A.O	-	-	-
44	HMGS	A.O	-	-	-
45	HMIN	A.I	-	-	-
46	GNDA	GND	-	-	GND
47	MIN	A.I	-	-	-
48	MGS	A.O	-	-	-
49	VREF	A.O	-	-	-
50	GNDPLL	GND	-	-	GND

Pin	Description	I/O	High	High_Z	Low
51	VCCPLL	VCC	VCC	-	-
52	VRTC	VCC	VCC	-	-
53	XOUT	A.O	-	-	-
54	XIN	A.I	-	-	-
55	GND	GND	-	-	GND
56	RESET	D.I	Normal	-	Reset
57	PDN	D.I	Power On	-	Power Down
58	NC	D.O	-	-	Normal
59	IRQ_INT	D.I	Normal	-	Interrupt
60	NC	D.O	-	-	Normal
61	NC	GND	-	-	Normal
62	NC	VCC	-	-	Normal
63	NC	D.O	-	-	Normal
64	HEAD_DET	D.I	Headset In	-	Non
65	LCD_BL_1	D.O	On	-	Off
66	LCD_BL_0	D.O	On	-	Off
67	SP LED	D.O	Off	-	On
68	LIGHTED	D.O	On	-	Off
69	BCLK	D.I	High	-	Low
70	FSYNC	D.I	High	-	Low
71	ADPCM OUT	D.I	High	-	Low
72	ADPCM IN	D.O	High	-	Low
73	RF_RESET	D.O	Normal	-	Reset
74	GND	GND	-	-	GND
75	VCC	VCC	VCC	-	-
76	KEY IN	D.I	Key In	-	Non
77	KEY IN	D.I	Key In	-	Non
78	KEY IN	D.I	Key In	-	Non
79	KEY IN	D.I	Key In	-	Non
80	NC	D.O	-	-	Normal
81	CHG_DET	D.I	Off Charge	-	On Charge
82	PW CTL1	D.O	-	pin2=Hi-Z:HighPower -	pin2=Hi-Z:LowPower pin2=L:SuperLowPower
83	PW CTL0	D.O	pin1=H:HighPower pin1=L:LowPower	-	pin1=H:- pin1=L:SuperLowPower
84	NC	D.O	-	-	Normal
85	NC	D.O	-	-	Normal
86	NC	D.O	-	-	Normal
87	NC	D.O	-	-	Normal
88	NC	D.O	-	-	Normal
89	NC	D.O	-	-	Normal
90	NC	D.O	-	-	Normal
91	NC	D.O	-	-	Normal
92	GND	GND	-	-	GND
93	VCC	VCC	VCC	-	-
94	DRDN	VCC	VCC	-	-
95	DWRN	GND	-	-	GND
96	UART_RX	D.I	High	-	Low
97	UART_TX	D.O	High	-	Low
98	EEP_CLK	D.O	High	-	Low
99	EEP_DI	D.O	High	-	Low
100	EEP_DOUT	D.I	High	-	Low

18. EXPLANATION OF IC TERMINALS (RF Unit, Base Unit)

18.1. IC101


IC101
1 SUBVCO
2 VDDAFVCO
3 GNDAFVCO
4 GNDAFPA
5 VDDAFPA
6 GNDAFPA
7 GNDAFPO
8 AFION
9 AFIOP
10 GNDAFIO
11 GNDAFSUB
12 ESDRING
13 VDDAFLNA
14 GNDPABIAS
15 AVIAS
16 AOCS
17 COSC
18 GNDBIAS
19 VDDBIAS
20 GNDMX
21 VDDMX
22 VDDAF
23 GNDAF
24 TP3
25 VDDSCFAD
26 GNDSCFAD
27 VREFADP
28 VREFADN
29 SOFT_DIG_VDD
30 SPIDOUT
31 SPIDIN
32 SOFT_DIG_GND
33 TXENOUT
34 SPICLK
35 SPIENB
36 TP4
37 PWRDWN
38 TP5
39 VDDPAD
40 GNDPAD
41 SUBPAD
42 TP6
43 RXENOUT
44 PCMBCLK
45 PCMSYNC
46 RXADPCM
47 TXADPCM
48 TP7
49 IRQ
50 TESTEN
51 SUBDMD
52 GNDDMD
53 VDDDMD
54 LQA
55 BATMON
56 VDDXO
57 XTALIN
58 XTALO
59 GNDXO
60 TP8
61 GNDSYN
62 VDDSYN
63 PLLRC
64 PLLVR

Pin	Description	I/O
1	SUBVCO	GND
2	VDDRFVCO	VCC
3	GNDRFVCO	GND
4	GNDRFPA	GND
5	VDDRFPA	VCC
6	GNDRFPA	GND
7	GNDRFPO	GND
8	RF ION	I/O
9	RF IOP	I/O
10	GNDRFIO	GND
11	GNDRFSUB	GND
12	ESDRING	GND
13	VDDRFLNA	VCC
14	GNDPABIAS	GND
15	RBIAS	I
16	ROCS	I
17	COSC	I
18	GNDBIAS	GND
19	VDDBIAS	VCC
20	GNDMX	GND
21	VDDMX	VCC
22	VDDAF	VCC
23	GNDAF	GND
24	TP3	O
25	VDDSCFAD	VCC
26	GNDSCFAD	GND
27	VREFADP	VCC
28	VREFADN	I
29	SOFT_DIG_VDD	VCC
30	SPIDOUT	D.O
31	SPIDIN	D.I
32	SOFT_DIG_GND	GND

Pin	Description	I/O
33	TXENOUT	D.O
34	SPICLK	D.I
35	SPIENB	D.I
36	RESET	D.I
37	PWRDWN	D.I
38	MCLKOUT	O
39	VDDPAD	VCC
40	GNDPAD	GND
41	SUBPAD	GND
42	TP6	D.O
43	RXENOUT	D.O
44	PCMBCLK	D.O
45	PCMSYNC	D.O
46	RXADPCM	D.O
47	TXADPCM	D.I
48	TP7	D.O
49	IRQ	D.O
50	TESTEN	D.I
51	XUBDMD	GND
52	GNDDMD	GND
53	VDDDMD	VCC
54	LQA	D.O
55	BATMON	I
56	VDDXO	VDD
57	XTALIN	I
58	XTALO	O
59	GNDXO	GND
60	TP8	D.I
61	GNDSYN	GND
62	VDDSYN	VCC
63	PLLRC	O
64	PLLVR	I

19. HOW TO REPLACE FLAT PACKAGE IC

19.1. Preparation

- SOLDER

Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

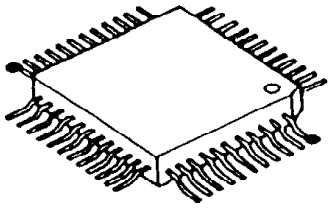
- Soldering iron

Recommended power consumption will be between 30 W to 40 W. / Temperature of Copper Rod 662 ± 50°F (350 ± 10°C) / (An expert may handle between 60 W to 80 W iron, but beginner might damage foil by overheating.)

- Flux / HI115 Specific gravity 0.863 / (Original flux will be replaced daily.)

19.2. Procedure

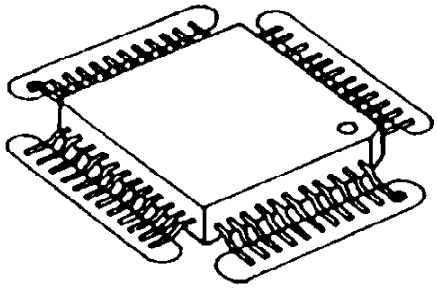
1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.



● - - - - - - Temporary soldering point.

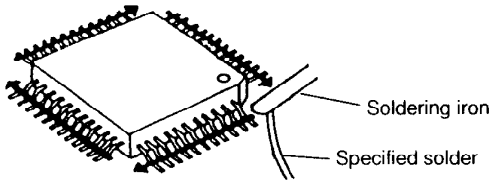
***Most important matter is accurate setting of IC to the corresponding soldering foil.**

2. Apply flux for all pins of FLAT PACKAGE IC.



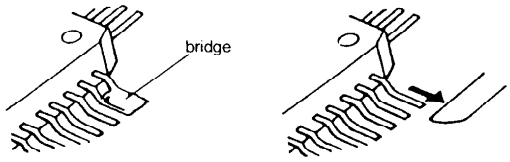
- - - - - - Flux

3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.

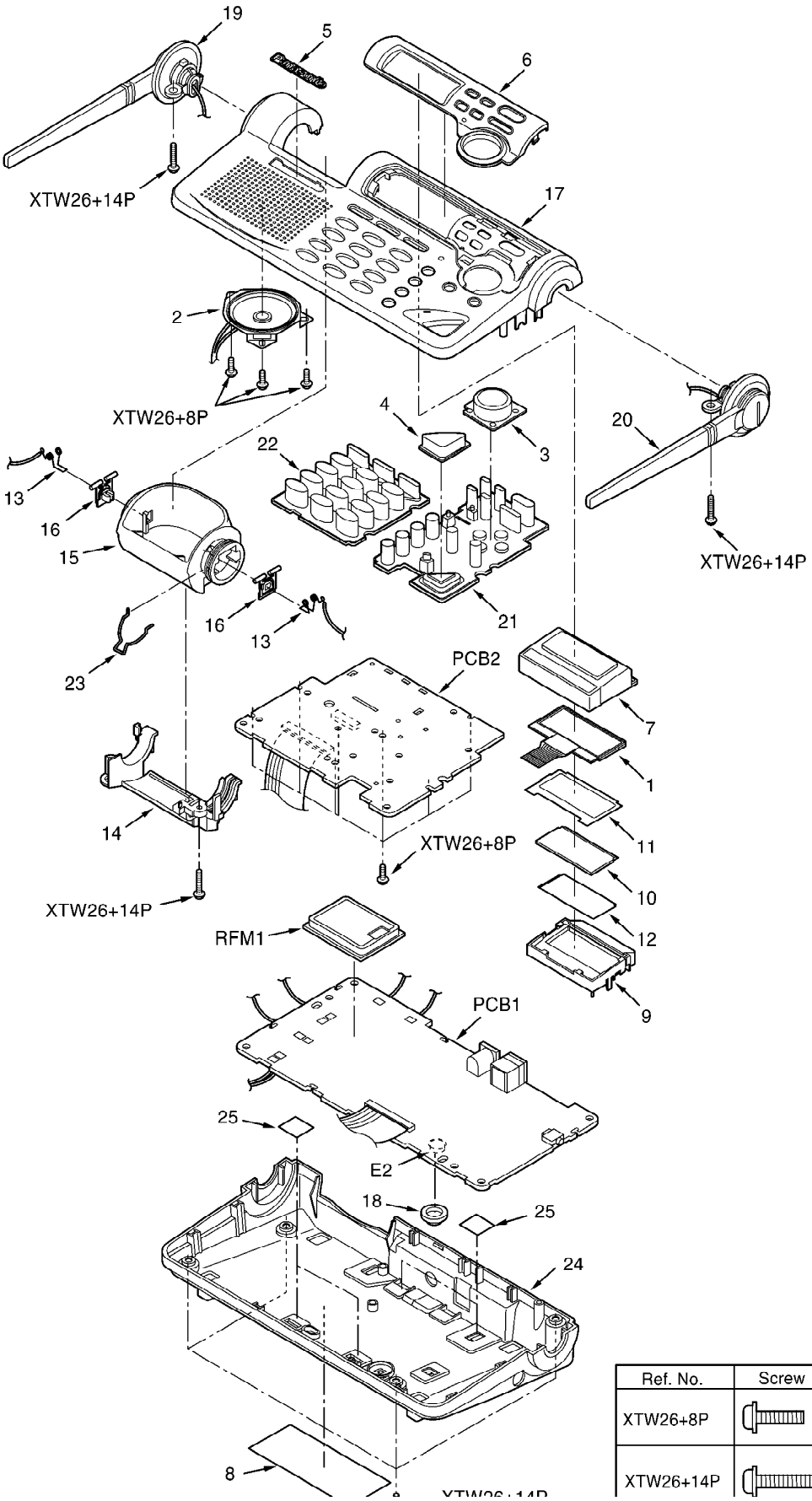


19.3. Modification Procedure of Bridge

1. **Re-solder slightly on bridged portion.**
2. **Remove remained solder along pins employing soldering iron as shown in below figure.**

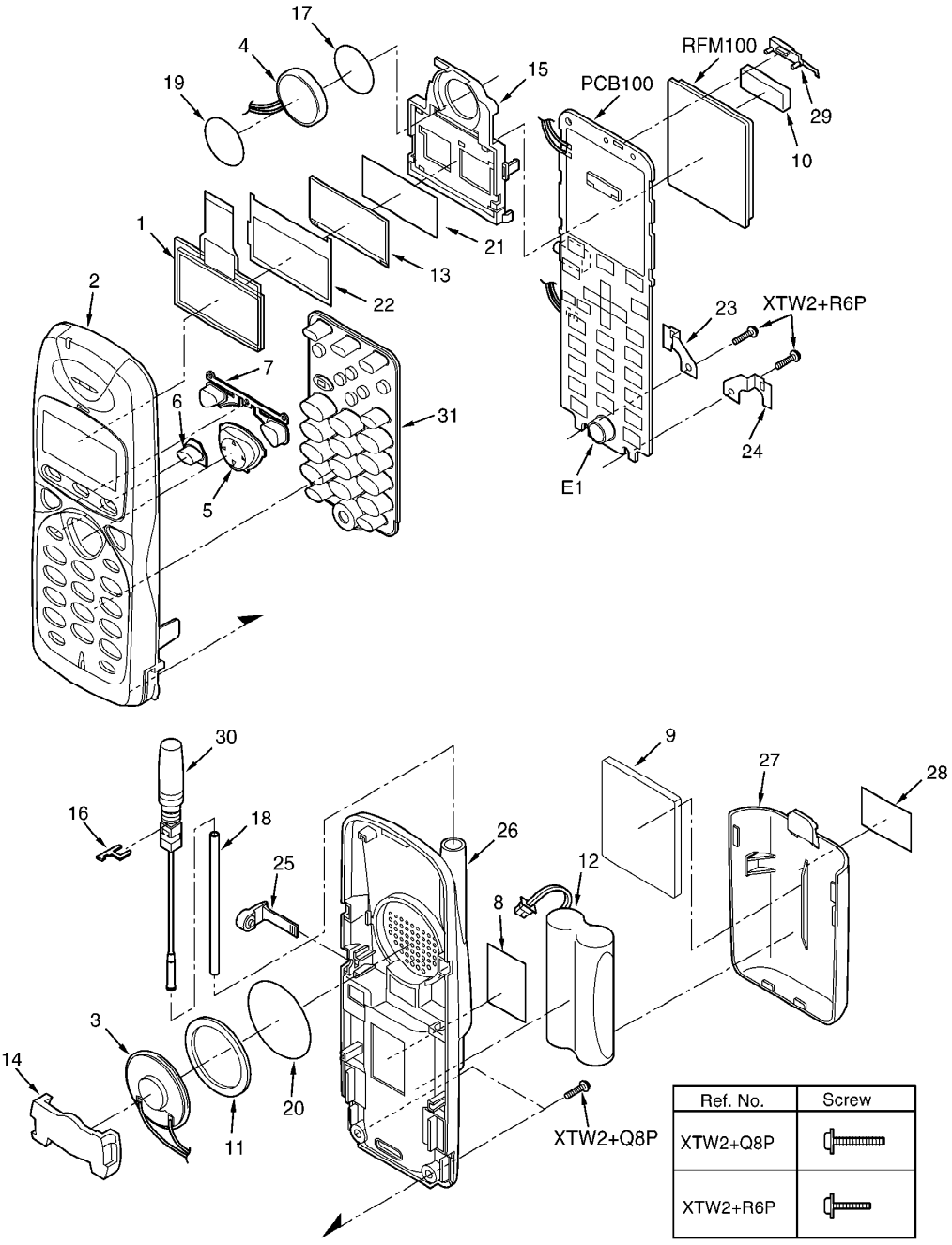


20. CABINET AND ELECTRICAL PARTS (Base Unit)

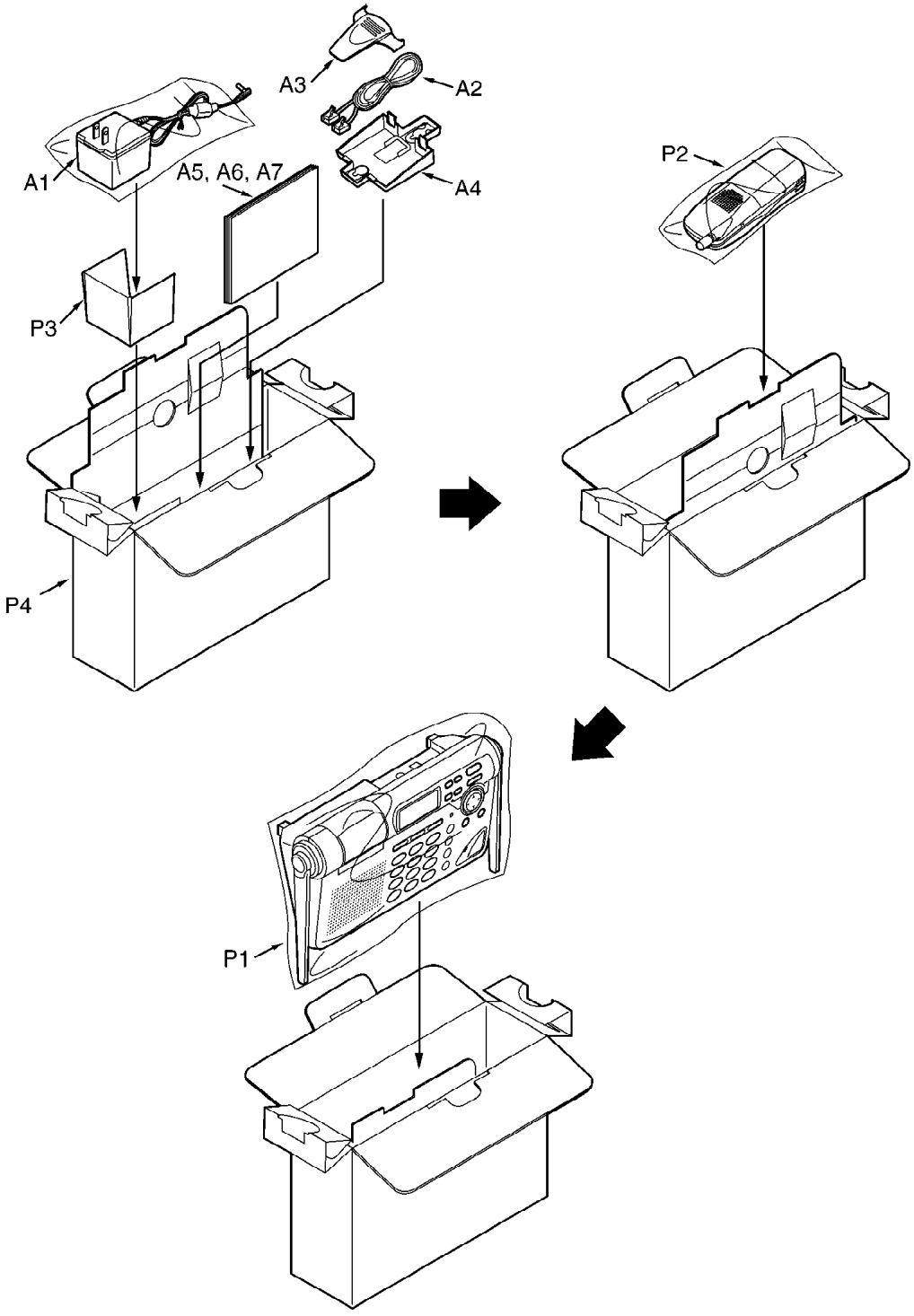


Ref. No.	Screw
XTW26+8P	
XTW26+14P	

21. CABINET AND ELECTRICAL PARTS (Handset)



22. ACCESSORIES AND PACKING MATERIALS



23. REPLACEMENT PARTS LIST

This replacement parts list are U.S.A. version only.

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention.
After the end of this period, the assembly will no longer be available.

2. **Important safety notice**
   Components identified by a ⚠ mark special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.
3. **The S mark indicates service standard parts and may differ from production parts.**
4. **RESISTORS & CAPACITORS**
   Unless otherwise specified;
   All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω
   All capacitors are in MICRO FARADS (μ F) P= μ μ F
   ***Type & Wattage of Resistor**

Type

ERC:Solid ERD:Carbon PQRD:Carbon	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Carbon ERS:Fusible Resistor ERF:Cement Resistor

Wattege

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor ECQS:Styrol PQCUV:Chip ECQMS:Mica	ECCD,ECKD,ECBT,PQCBC:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECSZ:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :63V 2A :100V

23.1. Base Unit

23.1.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQADGP097A0	LIQUID CRYSTAL DISPLAY	
2	PQAS57P03Y	SPEAKER	
3	PQBC10310Z1	NAVIGATOR BUTTON	S
4	PQBC10311Z1	SP PHONE BUTTON	S
5	PQGB7Y	BADGE	
6	PQGG10117Z1	GRILLE	S
7	PQGP10171Z1	LCD PANEL	S
8	PQGT14362Z	NAME PLATE	
9	PQHR10785Z	LCD HOLDER	
10	PQHR10787Z	LCD PLATE	
11	PQHX10961Z	LCD COVER SHEET	
12	PQHX10989Z	REFLECTOR SHEET	
13	PQJT10170Z	CHARGE TERMINAL	
14	PQKE10112Z1	CHARGE CASE HOLDER	S
15	PQKE10107Y1	CHARGE CASE	S
16	PQKE10111Z1	CHARGE TERMINAL CASE	S
17	PQKM10460Y1	UPPER CABINET	S
18	PQMG10025Z	CUSHION, RUBBER (MIC)	
19	PQSA10109Z	ANTENNA	
20	PQSA10110Z	ANTENNA	
21	PQSX10162Z	FUNCTION KEY	
22	PQSX10153Z	12 KEY RUBBER SWITCH	
23	PQUS10263Z	CRICK SPRING	
24	PQYF10182X1	LOWER CABINET	S
25	PQHS10466Z	HIMERON TAPE	

23.1.2. MAIN P.C. BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP1TG2670H	MAIN P.C. BOARD ASS'Y (RTL)	
		(ICS)	
IC301	PQVIXCF4502P	IC	
IC302	PQVINJM2360M	IC	
IC331	PQVIPS3432UT	IC	
IC501	PQVI16569ADA	IC	
IC751	PQWITG2670NH	IC	S
IC752	PQVITC7S08FU	IC	
IC753	PQVISPM3204T	IC	
IC754	PQVITC7W74U	IC	
		(TRANSISTORS)	
Q101	2SD1819A	TRANSISTOR(SI)	
Q115	2SD1819A	TRANSISTOR(SI)	
Q121	2SA1625	TRANSISTOR(SI)	
Q122	PQVT2N6517CA	TRANSISTOR(SI)	
Q131	2SC2120	TRANSISTOR(SI)	
Q302	PQVTXP132A11	TRANSISTOR(SI)	
Q304	2SD1664Q	TRANSISTOR(SI)	
Q321	2SD1994A	TRANSISTOR(SI)	
Q341	2SD1819A	TRANSISTOR(SI)	
Q342	2SD1819A	TRANSISTOR(SI)	
Q343	2SD1819A	TRANSISTOR(SI)	
Q371	2SD2136	TRANSISTOR(SI)	
Q381	2SD1819A	TRANSISTOR(SI)	

Ref. No.	Part No.	Part Name & Description	Remarks
Q445	2SD1819A	TRANSISTOR(SI)	
Q461	2SD1819A	TRANSISTOR(SI)	
Q601	2SD1664Q	TRANSISTOR(SI)	
Q725	2SD601A	TRANSISTOR(SI)	
Q751	UN5213	TRANSISTOR(SI)	S
Q752	2SD1758Q	TRANSISTOR(SI)	
Q753	PQVTDTC114EU	TRANSISTOR(SI)	
Q754	PQVTDTC143E	TRANSISTOR(SI)	
Q755	UN5213	TRANSISTOR(SI)	S
		(DIODES)	
D101	PQVDS1ZB60F1	DIODE(SI)	
D103	MA111	DIODE(SI)	
D121	PQVDRLZ20A	DIODE(SI)	
D122	PQVDRLZ2R0	DIODE(SI)	
D201	MA111	DIODE(SI)	
D202	MA111	DIODE(SI)	
D302	PQVDSS24	DIODE(SI)	
D306	PQVDHRU0302A	DIODE(SI)	
D313	MA8047	DIODE(SI)	
D314	MA8043	DIODE(SI)	
D315	PQVDHRU0302A	DIODE(SI)	
D321	MA8047	DIODE(SI)	
D331	MA8036H	DIODE(SI)	
D350	MA8051	DIODE(SI)	
D371	MA111	DIODE(SI)	
D376	MA8220	DIODE(SI)	
D377	MA8220	DIODE(SI)	
D445	MA153	DIODE(SI)	
D511	PQVDHRU0203A	DIODE(SI)	
D514	MA111	DIODE(SI)	
D515	MA111	DIODE(SI)	
D715	MA111	DIODE(SI)	
D716	MA111	DIODE(SI)	
D717	MA111	DIODE(SI)	
D719	MA111	DIODE(SI)	
D720	MA111	DIODE(SI)	
D721	MA8051	DIODE(SI)	
D722	MA8051	DIODE(SI)	
D723	MA8033	DIODE(SI)	
		(COILS)	
L101	PQLQXF330K	COIL	
L102	PQLQXF330K	COIL	
L201	PQLQR2KA213	COIL	
L202	PQLQR2KA213	COIL	
L203	PQLQR2KA213	COIL	
L204	PQLQR2KA213	COIL	
L302	PQLE139	COIL	
L350	PQLQXF100K	COIL	
L372	PQLQR2K1A102	COIL	
L373	PQLQR2K1A102	COIL	
L374	PQLQR2K1A102	COIL	
L375	PQLQR2K1A102	COIL	
L376	PQLQXF3R3K	COIL	
L377	PQLQXF3R3K	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L515	PQLQR2K1A102	COIL	
L715	PQLQR2K1A102	COIL	
L716	PQLQR2KA213	COIL	
L901	PQLQR2KA213	COIL	
L902	PQLQR2KA213	COIL	
L904	PQLQR2KA213	COIL	
L906	PQLQR2KA213	COIL	
		(JACKS)	
CN101	PQJJ1T008X	JACK/SOCKET	
CN102	PQJJ1T022Z	JACK/SOCKET	
CN701	PQJJ1C001Z	JACK/SOCKET	
		(VARISTORS)	
SA101	PQVDDSS301L	VARISTOR	
SA102	PQVDDSS301L	VARISTOR	
		(BATTERY TERMINALS)	
G601	PQJT10152Z	BATTERY TERMINAL	
G602	PQJT10152Z	BATTERY TERMINAL	
G603	PQJT10152Z	BATTERY TERMINAL	
G604	PQJT10152Z	BATTERY TERMINAL	
G605	PQJT10152Z	BATTERY TERMINAL	
G606	PQJT10152Z	BATTERY TERMINAL	
		(OTHERS)	
E1	PQJE10107Z	CONNECTOR	
E2	PQJM150Z	MICROPHONE	
P101	PQRPAR390N	THERMISTOR	S
CN702	PQJS30B37Z	CONNECTOR	
RA702	EXRV8V221JV	RESISTOR ALLAY	
X501	PQVCK4096N9Z	CRYSTAL OSCILLATOR	
		(RESISTORS)	
R103	ERJ3GEYJ104	100k	
R104	ERJ3GEYJ104	100k	
R106	ERJ3GEYJ472	4.7k	
R107	ERJ3GEYJ473	47k	
R111	ERJ3GEYJ394	390k	
R112	ERJ3GEYJ394	390k	
R113	ERJ3GEYJ472	4.7k	
R115	ERJ3GEYJ125	1.2M	
R116	ERDS1VJ106	10M	
R117	ERJ3GEYJ335	3.3M	
R121	ERJ3GEYJ104	100k	
R122	ERJ3GEYJ103	10k	
R123	ERJ3GEYJ153	15k	
R124	ERJ3GEYJ473	47k	
R128	ERJ3GEYJ103	10k	
R131	ERJ3GEYJ393	39k	
R132	ERJ3GEYJ222	2.2k	
R136	ERDS1TJ330	33	S
R138	ERJ3GEYJ470	47	
R139	ERJ3GEYJ122	1.2k	
R140	ERJ3GEYJ152	1.5k	
R201	ERJ3GEYJ103	10k	
R202	ERJ3GEY0R00	0	
R203	ERJ3GEY0R00	0	
R313	ERJ3GEYJ221	220	

Ref. No.	Part No.	Part Name & Description	Remarks
R314	ERJ3GEYJ221	220	
R315	ERX1SJR15	0.15	
R316	ERJ3GEYJ102	1k	
R317	ERJ3GEYF123	12k	
R318	ERJ3GEYF473	47k	
R319	ERJ3GEY0R00	0	
R320	ERDS1TJ331	330	S
R321	ERJ3GEYJ391	390	
R322	ERJ3GEYJ102	1k	
R331	ERJ3GEYJ273	27k	
R332	ERJ3GEYJ683	68k	
R333	ERJ3GEYJ103	10k	
R335	ERJ3GEYJ561	560	
R336	ERJ3GEYJ563	56k	
R341	ERJ3GEYJ473	47k	
R342	ERJ3GEYJ224	220k	
R344	ERJ3GEYJ104	100k	
R345	ERJ3GEYJ224	220k	
R371	ERJ3GEYJ121	120	
R372	ERJ3GEYJ561	560	
R373	ERJ3GEYJ180	18	
R374	ERJ3GEYJ180	18	
R375	ERJ3GEYJ180	18	
R376	ERJ3GEYJ180	18	
R377	ERDS1TJ820	82	S
R378	ERDS1TJ820	82	S
R381	ERJ3GEYJ563	56k	
R382	ERJ3GEYJ223	22k	
R383	ERJ3GEYJ102	1k	
R384	ERJ3GEYJ104	100k	
R385	ERJ3GEY0R00	0	
R386	ERJ3GEYJ102	1k	
R411	ERJ3GEYJ394	390k	
R412	ERJ3GEYJ394	390k	
R413	ERJ3GEYJ103	10k	
R414	ERJ3GEYJ103	10k	
R415	ERJ3GEYJ273	27k	
R431	ERJ3GEYJ222	2.2k	
R442	ERJ3GEYJ103	10k	
R443	ERJ3GEYJ153	15k	
R444	ERJ3GEYJ332	3.3k	
R445	ERJ3GEYJ563	56k	
R446	ERJ3GEYJ105	1M	
R447	ERJ3GEYJ221	220	
R448	ERJ3GEYJ332	3.3k	
R450	ERJ3GEYJ152	1.5k	
R461	ERJ3GEYJ150	15	
R462	ERJ3GEYJ392	3.9k	
R464	ERJ3GEYJ474	470k	
R465	ERJ3GEYJ390	39	
R466	ERJ3GEY0R00	0	
R501	ERJ3GEYJ105	1M	
R502	ERJ3GEYJ331	330	
R601	ERJ3GEY0R00	0	

Ref. No.	Part No.	Part Name & Description	Remarks
R705	ERJ3GEYJ101	100	
R706	ERJ3GEYJ101	100	
R707	ERJ3GEYJ472	4.7k	
R722	ERJ3GEYJ392	3.9k	
R723	ERJ3GEYJ102	1k	
R724	ERJ3GEYJ562	5.6k	
R725	ERJ3GEYJ821	820	
R726	ERJ3GEYJ392	3.9k	
R727	ERJ3GEYJ274	270k	
R728	ERJ3GEYJ102	1k	
R730	ERJ3GEYJ821	820	
R731	ERJ3GEYJ221	220	
R732	ERJ3GEYJ102	1k	
R733	ERJ3GEYJ181	180	
R734	ERJ3GEYJ181	180	
R735	ERJ3GEYJ181	180	
R751	ERJ3GEYJ104	100k	
R752	ERJ3GEYJ104	100k	
R757	ERJ3GEYJ221	220	
R776	ERJ3GEYJ102	1k	
R777	ERJ3GEYJ102	1k	
R779	ERJ3GEYJ333	33k	
R780	ERJ3GEYJ103	10k	
R785	ERJ3GEYJ103	10k	
R786	ERJ3GEYJ104	100k	
R787	ERJ3GEYJ104	100k	
R788	ERJ3GEY0R00	0	
R789	ERJ3GEYJ473	47k	
L205	ERJ3GEY0R00	0	
L206	ERJ3GEY0R00	0	
L207	ERJ3GEY0R00	0	
L208	ERJ3GEY0R00	0	
L209	ERJ3GEY0R00	0	
L210	ERJ3GEY0R00	0	
L211	ERJ3GEY0R00	0	
L212	ERJ3GEY0R00	0	
L213	ERJ3GEY0R00	0	
L214	ERJ3GEY0R00	0	
L215	ERJ3GEY0R00	0	
L216	ERJ3GEY0R00	0	
L217	ERJ3GEY0R00	0	
L218	ERJ3GEY0R00	0	
L219	ERJ3GEY0R00	0	
L511	PQ4R10XJ000	0	S
		(CAPACITORS)	
C101	ECKD2H681KB	680P	S
C102	ECKD2H681KB	680P	S
C103	PQCUV1H154KR	0.15	
C104	PQCUV1H154KR	0.15	
C106	PQCUV1A684KB	0.68	
C111	ECUV1H681JCV	680P	S
C112	ECUV1H681JCV	680P	S
C115	ECUV1H103KBV	0.01	
C121	ECUV1H103KBV	0.01	S

Ref. No.	Part No.	Part Name & Description	Remarks
C122	ECUV1H070CCV	7P	
C123	ECUV1H070CCV	7P	
C131	ECUV1H070CCV	7P	
C132	ECUV1H103KBV	0.01	
C134	ECEA1HKA010	1	
C135	ECUV1H070CCV	7P	
C139	ECEA1CKS100	10	S
C140	ECUV1C473KBV	0.047	
C150	ECUV1H102KBV	0.001	
C151	ECUV1H103KBV	0.01	S
C152	ECUV1C104ZFV	0.1	
C160	ECUV1H070CCV	7P	
C161	ECUV1H070CCV	7P	
C162	ECUV1H070CCV	7P	
C163	ECUV1H070CCV	7P	
C302	ECUV1C104ZFV	0.1	
C303	ECUV1C104ZFV	0.1	
C304	ECEA0JU220	22	
C306	ECEA1AU102	1000	
C312	ECEA0JKS101	100	
C313	ECUV1A105ZFV	1	
C314	ECEA0JKS470	47	
C315	ECUV1C104ZFV	0.1	
C316	EEUFC1E221	220P	
C318	ECUV1H221JCV	220P	
C319	EEUFC1A471	470P	
C320	ECUV1C104ZFV	0.1	
C341	ECUV1H102KBV	0.001	
C342	ECUV1H102KBV	0.001	
C344	ECUV1H681JCV	680P	S
C345	ECUV1C104KBV	0.1	
C371	ECUV1C104ZFV	0.1	
C372	ECUV1H471JCV	470P	S
C411	ECUV1H121JCV	120P	
C412	ECUV1A105ZFV	1	
C413	ECUV1H121JCV	120P	
C415	ECUV1A105ZFV	1	
C431	ECUV1H272KBV	0.0027	
C432	ECUV1C104KBV	0.1	
C433	ERJ3GEYJ822	8.2K	
C441	ECUV1A224KBV	0.22	
C442	ECUV1A224KBV	0.22	
C443	ECUV1H101JCV	100P	
C444	ECUV1C104KBV	0.1	
C445	ECEA1CKS100	10	S
C446	ECUV1H070CCV	7P	
C447	ECUV1H070CCV	7P	
C461	ECUV1C104ZFV	0.1	
C462	ECUV1H070CCV	7P	
C463	ECUV1C683KBV	0.068	
C464	ECUV1H070CCV	7P	
C467	ECUV1H070CCV	7P	
C501	ECEA0JU102	1000	
C502	ECUV1C104ZFV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C503	ECUV1C104ZFV	0.1	
C504	ECUV1C104ZFV	0.1	
C505	ECUV1C104ZFV	0.1	
C506	ECUV1H100DCV	10P	S
C507	ECUV1H100DCV	10P	S
C511	ECEA1AU101	100	S
C512	ECUV1C104ZFV	0.1	
C515	ECEA0JU220	22	
C516	ECUV1C104ZFV	0.1	
C601	ECEA1AU221	220	S
C604	ECEA0JU471	470	
C607	ECUV1C104ZFV	0.1	
C700	ECUV1H681JCV	680P	S
C701	ECUV1H101JCV	100P	
C703	ECUV1H101JCV	100P	
C706	ECUV1H471JCV	470P	S
C707	ECUV1H471JCV	470P	S
C708	ECUV1H471JCV	470P	S
C709	ECUV1H471JCV	470P	S
C711	ECEA0JU331	330	
C715	EECW5R5D473	0.047	S
C719	ECUV1H680JCV	68P	
C720	ECUV1H680JCV	68P	
C722	ECEA1HKS4R7	4.7	S
C723	ECUV1H103KBV	0.01	S
C724	ECUV1A224KBV	0.22	
C725	ECUV1A224KBV	0.22	
C726	ECUV1C104KBV	0.1	
C727	ECUV1H221JCV	220P	
C728	ECUV1H102KBV	0.001	
C729	ECUV1C104ZFV	0.1	
C730	ECUV1H221JCV	220P	
C736	ECUV1H221JCV	220P	
C737	ECUV1H221JCV	220P	
C738	ECUV1H221JCV	220P	
C739	ECUV1H221JCV	220P	
C740	ECUV1H221JCV	220P	
C741	ECUV1H471JCV	470P	S
C742	ECUV1H471JCV	470P	S
C743	ECUV1H471JCV	470P	S
C744	ECUV1H471JCV	470P	S
C745	ECUV1H471JCV	470P	S
C746	ECUV1H471JCV	470P	S
C747	ECUV1H471JCV	470P	S
C748	ECUV1H471JCV	470P	S
C750	ECUV1H471JCV	470P	S
C751	ECUV1H471JCV	470P	S
C753	ECUV1H680JCV	68P	
C754	ECUV1H680JCV	68P	
C755	ECUV1H680JCV	68P	
C756	ECUV1H680JCV	68P	
C757	ECUV1H680JCV	68P	
C759	ECUV1H1R5CCV	1.5	
C760	ECUV1H070CCV	7P	

Ref. No.	Part No.	Part Name & Description	Remarks
C761	ECUV1H070CCV	7P	
C763	ECUV1H070CCV	7P	
C764	ECUV1H070CCV	7P	
C766	ECUV1H1R5CCV	1.5	
C767	ECUV1H1R5CCV	1.5	
C768	ECUV1H1R5CCV	1.5	
C769	ECUV1H1R5CCV	1.5	
C770	ECUV1H1R5CCV	1.5	
C771	ECUV1H1R5CCV	1.5	
C772	ECUV1H1R5CCV	1.5	
C773	ECUV1H1R5CCV	1.5	
C774	ECUV1H1R5CCV	1.5	
C775	ECUV1H1R5CCV	1.5	
C776	ECUV1H1R5CCV	1.5	
C777	ECUV1H1R5CCV	1.5	
C778	ECUV1H1R5CCV	1.5	
C781	ECEA0JU220	22	
C782	ECUV1C104KBV	0.1	
C785	ECUV1H470JCV	47P	
C786	ECUV1H330JCV	33P	
C787	ECUV1H330JCV	33P	
C788	ECUV1H471JCV	470P	S
C790	ECUV1A105ZFV	1	
C791	ECUV1H100DCV	10P	S
C792	ECUV1H100DCV	10P	S
C793	ECUV1C104ZFV	0.1	
C794	ECUV1C104ZFV	0.1	
C795	ECUV1H121JCV	120P	
C796	ECUV1HOR5CCV	0.5	
C797	ECUV1HOR5CCV	0.5	
C798	ECUV1HOR5CCV	0.5	

23.1.3. OPERATIONAL P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP2TG2670H	OPERATIONAL P.C.BOARD ASS'Y(RTL)	
		(TRANSISTOR)	
Q801	PQVTDTA143EU	TRANSISTOR(SI)	
Q802	PQVTDTA143EU	TRANSISTOR(SI)	
		(DIODES)	
D801	MA111	DIODE(SI)	
D802	MA111	DIODE(SI)	
		(LEDS)	
LED801	PQVDFA1105W	LED	
LED802	PQVDFA1105W	LED	
LED803	PQVDFA1105W	LED	
LED804	LNJ211R8ARU	LED	
LED805	LNJ211R8ARU	LED	
LED806	LNJ211R8ARU	LED	
LED811	PQVDHPY1105W	LED	
LED812	PQVDHPY1105W	LED	
LED813	PQVDHPY1105W	LED	
		(CONNECTORS)	
CN801	PQJS30B37Z	CONNECTOR	
CN802	PQJS22B11Z	CONNECTOR	
		(RESISTORS)	
R801	ERJ3GEYJ101	100	
R802	ERJ3GEYJ330	33	
R803	ERJ3GEYJ101	100	
R804	ERJ3GEYJ330	33	
R805	ERJ3GEYJ101	100	
R806	ERJ3GEYJ330	33	
R807	ERJ3GEYJ391	390	
R808	ERJ3GEYJ391	390	
R809	ERJ3GEYJ391	390	
R810	ERJ3GEYF824	820K	
R811	ERJ3GEYF434	430K	
		(CAPACITORS)	
C801	ECUV1A474KBV	0.47	
C802	ECUV1C104ZFV	0.1	
C803	ECUV1C104ZFV	0.1	
C804	ECUV1C104ZFV	0.1	
C805	ECUV1C104ZFV	0.1	
C806	ECUV1C104ZFV	0.1	
C807	ECUV1A474KBV	0.47	
C808	ECUV1A474KBV	0.47	

23.1.4. RF UNIT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
RFM1	PQLP10237Z	RF BLOCK	

23.2. Handset

23.2.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQADGP096B0	LIQUID CRYSTAL DISPLAY	
2	PQYMTG2670NR	FRONT CABINET ASS'Y	
3	PQAS3P07Y	SPEAKER	
4	PQAS15P01Z	SPEAKER	
5	PQBC10313Z1	NAVIGATOR BUTTON	S
6	PQBC10314Z1	SP PHONE BUTTON	S
7	PQBX10343Z1	FUNCTION BUTTON	S
8	PQGT14363Z	NAME PLATE	
9	PQHE10119Z	CUSHION	
10	PQHG10610Z	CUSHION	
11	PQHG10589Y	SP RUBBER SHEET	
12	PQHHR150SVC	BATTERY	S
13	PQHR10781Z	LCD PLATE	
14	PQHR10778Z	SP HOLDER	
15	PQHR10779Z	LCD HOLDER	
16	PQHR10839Z	ANTENNA HOLDER	
17	PQHR10834Z	RECEIVER HOLDER	
18	PQHR10840Z	ANTENNA COVER	
19	PQHS10458Z	SPEAKER NET	
20	PQHS10457Z	SPEAKER NET	
21	PQHX10963Y	LCD REFRECTOR SHEET	
22	PQHX10962Z	LCD COVER SHEET	
23	PQJT10168Y	CHARGE TERMINAL (L)	
24	PQJT10169Y	CHARGE TERMINAL (R)	
25	PQKE10108Z1	E/P CAP	S
26	PQKF10494Z1	REAR CABINET	S
27	PQKK10108Z1	BATTERY COVER	S
28	PQQT22128Y	CHARGE LABEL	
29	PQSA10114Z	ANTENNA	
30	PQSA10111Z	ANTENNA	
31	PQSX10155Z	RUBBER SWITCH	

23.2.2. MAIN P.C. BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPTG2670NR	MAIN P.C.BOARD ASS'Y(RTL)	
		(ICS)	
IC201	PQVI16107AFA	IC	
IC202	PQWITG2670NR	IC	
IC203	PQVIC61CC20N	IC	
IC204	PQVIXCR3302M	IC	
IC205	PQVIC61CC22N	IC	
IC206	PQVIC68B102M	IC	
IC207	PQVIMM1385EN	IC	
IC208	PQVINJM2135R	IC	
		(TRANSISTORS)	
Q201	PQVTDTC143E	TRANSISTOR(SI)	
Q202	PQVTDTC143E	TRANSISTOR(SI)	
Q203	PQVTDTA143TU	TRANSISTOR(SI)	
Q204	2SA1797Q	TRANSISTOR(SI)	
Q205	2SD1819A	TRANSISTOR(SI)	
Q206	PQVTDTC143E	TRANSISTOR(SI)	
Q207	2SD1819A	TRANSISTOR(SI)	
Q211	PQVTDTA143TU	TRANSISTOR(SI)	
Q213	PQVTDTC143E	TRANSISTOR(SI)	
Q214	PQVTXP151A13	TRANSISTOR(SI)	
Q216	2SD1819A	TRANSISTOR(SI)	
		(DIODES)	
D201	MA2ZD1400	DIODE(SI)	
D202	MA2ZD1400	DIODE(SI)	
D204	MA2ZD1400	DIODE(SI)	
D205	PQVDPTZTE25	DIODE(SI)	S
D209	MA111	DIODE(SI)	
D211	MA8150	DIODE(SI)	
D214	MA8150	DIODE(SI)	
D215	MA8150	DIODE(SI)	
D216	PQVDEP10LA03	DIODE(SI)	
D217	PQVDEC10	DIODE(SI)	
D218	MA8150	DIODE(SI)	
D219	MA8150	DIODE(SI)	
D221	MA111	DIODE(SI)	
D222	MA111	DIODE(SI)	
		(LEDS)	
LED201	PQVDSML310MT	LED	
LED202	PQVDSML310MT	LED	
LED203	PQVDSML310MT	LED	
LED204	PQVDSML310MT	LED	
LED208	PQVDBR1111C	LED	S
LED210	LNJ115W8PRA	LED	
LED211	LNJ115W89RA	LED	
LED212	LNJ115W89RA	LED	
LED213	LNJ115W89RA	LED	
		(COILS)	
L203	PQLQR3FL121	COIL	
L204	PQLQR3FL121	COIL	
L205	PQLQR3FL121	COIL	
L209	PQLE1G5K3220	COIL	
L300	PQLQR4T151M	COIL	
L301	PQLQR4T151M	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
		(CONNECTORS)	
CN201	PSJS22A62Z	CONNECTOR	
CN202	PSJP02A44Z	CONNECTOR	
		(OTHERS)	
E1	PQJM150Z	MICROPHONE	
X201	PQVCI4096N3Z	CRYSTAL OSCILLATOR	
CN203	PQJJ1C002Z	JACK/SOCKET	
G701	PQMH10424Z	PLATE , METAL	
G702	PQMH10424Z	PLATE , METAL	
G703	PQMH10424Z	PLATE , METAL	
G704	PQMH10424Z	PLATE , METAL	
G705	PQMH10424Z	PLATE , METAL	
G706	PQMH10424Z	PLATE , METAL	
		(RESISTORS)	
R201	ERJ3GEYJ101	100	
R202	ERJ3GEYJ101	100	
R203	ERJ3GEYJ101	100	
R204	ERJ3GEYJ101	100	
R205	ERJ3GEYJ151	150	
R206	ERJ3GEYJ151	150	
R207	ERJ3GEYJ151	150	
R209	ERJ3GEYJ104	100k	
R210	ERJ3GEYJ104	100k	
R211	ERJ3GEYJ104	100k	
R212	ERJ3GEYJ101	100	
R213	ERJ3GEYJ101	100	
R214	ERJ3GEYJ331	330	
R215	ERJ3GEYJ101	100	
R216	ERJ3GEYJ331	330	
R217	ERJ3GEYF434	430k	
R218	ERJ3GEYF824	820k	
R220	ERJ3GEYJ474	470k	
R221	ERJ3GEYJ103	10k	
R222	ERJ3GEYJ101	100	
R223	ERJ3GEY0R00	0	
R224	ERJ3GEYJ103	10k	
R225	ERJ3GEYJ472	4.7k	
R226	ERJ3GEYJ123	12k	
R227	ERJ3GEYJ473	47k	
R228	ERJ3GEYJ224	220k	
R229	ERJ3GEYJ102	1k	
R230	ERJ3GEYJ102	1k	
R231	ERJ3GEYJ102	1k	
R232	ERJ3GEYJ103	10k	
R234	ERJ3EKF2204	2.2M	
R235	ERJ3EKF2204	2.2M	
R236	ERJ3GEYJ104	100k	
R244	ERJ3GEYJ104	100k	
R245	ERJ3GEYJ103	10k	
R246	ERJ3GEYJ393	39k	
R247	ERJ3GEYJ391	390	
R248	ERJ3GEYJ393	39k	
R249	ERJ3GEYJ222	2.2k	
R250	ERJ3GEYJ222	2.2k	

Ref. No.	Part No.	Part Name & Description	Remarks
R251	ERJ3GEYJ101	100	
R253	ERJ3GEYJ222	2.2k	
R265	ERJ3GEYJ103	10k	
R272	ERJ3GEYJ120	12	
R273	ERJ3GEYJ120	12	
R274	ERJ3GEYJ120	12	
R275	ERJ3EKF2203	220k	S
R276	ERJ3GEYF104	100k	
R279	ERJ3GEYF473	47k	
R280	ERJ3GEYJ180	18	
R281	ERJ3GEYJ180	18	
R284	ERJ3GEY0R00	0	
R285	ERJ3GEY0R00	0	
R286	ERJ3GEYJ224	220k	
R287	ERJ3GEYJ104	100k	
R288	ERJ3GEY0R00	0	
R289	ERJ3GEYJ683	68k	
R291	ERJ3GEYJ823	82k	
C204	ERJ3GEYJ104	100k	
C274	ERJ3GEY682	6.8k	
L202	ERJ3GEY0R00	0	
L206	ERJ3GEY0R00	0	
		(CAPACITORS)	
C203	ECUV1C104ZFV	0.1	
C205	ECUV1H101JCV	100P	
C206	ECUV1C104KBV	0.1	
C207	ECUV1C104KBV	0.1	
C208	ECUV1C104KBV	0.1	
C209	ECUV1C104KBV	0.1	
C210	ECUV1C104KBV	0.1	
C211	ECUV1A474KBV	0.47	
C212	ECUV1A474KBV	0.47	
C213	ECEV0JBS221P	220	
C214	ECUV1C104ZFV	0.1	
C215	ECUV1A474KBV	0.47	
C217	ECUV1C104ZFV	0.1	
C218	ECUV1C104ZFV	0.1	
C219	ECUV1H470JCV	47P	
C220	ECST0JC107	100	
C221	ECUV1C104ZFV	0.1	
C222	ECUV1C104ZFV	0.1	
C223	ECST0JZ106R	10	
C224	ECUV1C104ZFV	0.1	
C225	ECST0JY475	4.7	
C226	ECUV1C104ZFV	0.1	
C227	ECUV1H470JCV	47P	
C228	ECUV1H103KBV	0.01	
C229	ECUV1C104ZFV	0.1	
C230	ECUV1C104KBV	0.1	
C231	ECUV1A224KBV	0.22	
C232	ECUV1C104KBV	0.1	
C233	ECUV1C104ZFV	0.1	
C234	ECUV1C104ZFV	0.1	
C236	ECUV1H060DCV	6P	S

Ref. No.	Part No.	Part Name & Description	Remarks
C237	ECUV1H060DCV	6P	S
C238	ECEV0JBS221P	220	
C239	ECUV1H103KBV	0.01	
C249	ECST0GY226	22	
C250	ECUV1A105ZFV	1	
C255	ECUV1C104ZFV	0.1	
C267	ECST0JX226	22	
C277	ECUV1H102KBV	0.001	
C280	ECUV1C104ZFV	0.1	
C284	ECUV1H100DCV	10P	
C286	ECUV1H100DCV	10P	
C287	ECUV1C104ZFV	0.1	
C288	ECUV1H100DCV	10P	
C289	ECST0JY475	4.7	
C291	ECST0JTPB337	330	
C292	ECST0JC107	100	
C293	ECUV1H182KBV	0.0018	
C294	ECUV1H103KBV	0.01	S
C295	ECUV1H102KBV	0.001	
C297	ECUV1H100DCV	10P	
C299	ECUV1H100DCV	10P	
C302	ECUV1C104ZFV	0.1	
C303	ECUV1H471JCV	470P	S
C304	ECUV1C104KBV	0.1	
C305	ECUV1A105ZFV	1	
C306	ECST0JZ106R	10	
C307	ECUV1H070CCV	7P	
C310	ECUV1H103KBV	0.01	S
C320	PQWYTG2650NR	CAPACITOR ASSEMBLY	S
R290	ECUV1H070CCV	7P	

23.2.3. RF UNIT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
RFM100	PQWPTG2650KT	RF BLOCK WITH CAPACITOR	

23.2.4. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQWATG2650N	AC ADAPTOR	
A2	PQJA10075Z	TEL CORD	
A3	PQKE10109Z1	BELT CLIP	S
A4	PQKL10038Z1	WALL MOUNT ADAPTOR	S
A5	PQQW12296Z	QUICK GUIDE (English)	
A6	PQQW12297Z	QUICK GUIDE (Spanish)	
A7	PQQX12840Z	INSTRUCTION BOOK	
P1	PQPP170Y	PROTECTION COVER	
		(for Base Unit)	
P2	XZB10X35A02	PROTECTION COVER	
		(for Handset)	
P3	PQPD10440Y	CUSHION	
P4	PQPK13229Z	GIFT BOX	

24. FOR SCHEMATIC DIAGRAM

24.1. Base Unit (SCHEMATIC DIAGRAM (Base Unit))

Notes:

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

This schematic diagram may be modified at any time with the development of new technology.

24.2. Handset (SCHEMATIC DIAGRAM (Handset))

Notes:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.

2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

25. SCHEMATIC DIAGRAM (RF Unit)

25.1. RF Unit Reference Drawing

25.2. Base Unit

25.3. Handset

26. OPERATION

26.1. Component View

26.2. Flow Solder Side View

27. SCHEMATIC DIAGRAM (Operation)

28. CIRCUIT BOARD (Base Unit)

28.1. Component View

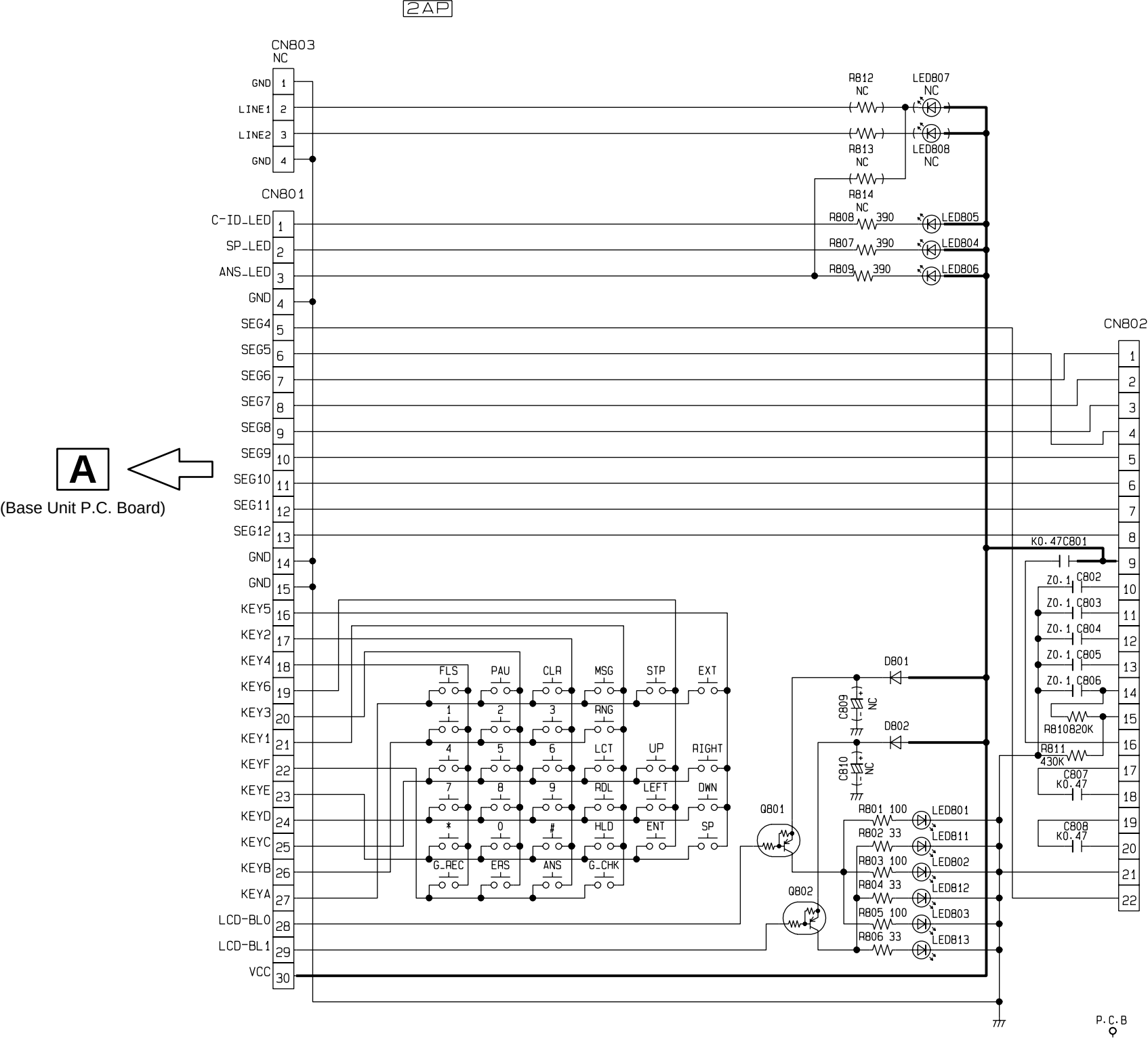
28.2. Flow Solder Side View

29. SCHEMATIC DIAGRAM (Base Unit)

30. CIRCUIT BOARD (Handset)

31. SCHEMATIC DIAGRAM (Handset)

U (Q) / KXTG2670N / Printed in Japan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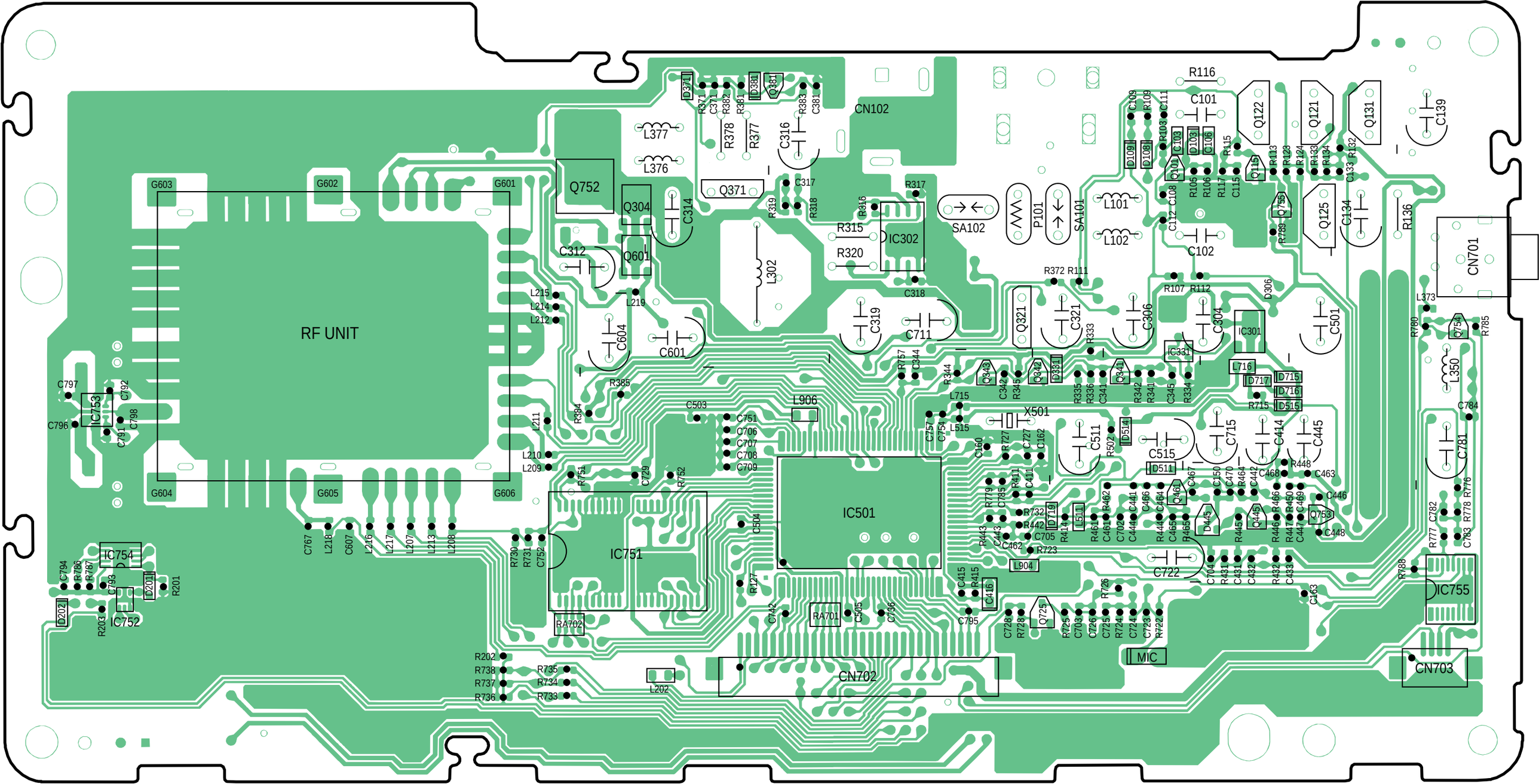
CN803
NC
GND 1
LINE1 2
LINE2 3
GND 4
CN801
C-ID_LED 1
SP_LED 2
ANS_LED 3
GND 4
SEG4 5
SEG5 6
SEG6 7
SEG7 8
SEG8 9
SEG9 10
SEG10 11
SEG11 12
SEG12 13
GND 14
GND 15
KEY5 16
KEY2 17
KEY4 18
KEY6 19
KEY3 20
KEY1 21
KEYF 22
KEYE 23
KEYD 24
KEYC 25
KEYB 26
KEYA 27
LCD-BL0 28
LCD-BL1 29
VCC 30
A
(Base Unit P.C. Board)
R812 NC
LED807 NC
R813 NC
LED808 NC
R814 NC
R808 390
LED805
R807 390
LED804
R809 390
LED806
CN802
K0.47C801
Z0.1 C802
Z0.1 C803
Z0.1 C804
Z0.1 C805
Z0.1 C806
RB10820K
R811 430K
C807 K0.47
C808 K0.47
D801
C809 NC
D802
C810 NC
Q801
Q802
R801 100
LED801
R802 33
LED811
R803 100
LED802
R804 33
LED812
R805 100
LED803
R806 33
LED813
FLS PAU CLR MSG STP EXT
1 2 3 RNG
4 5 6 LCT UP RIGHT
7 8 9 RDL LEFT DWN
* 0 # HLD ENT SP
G_REC ERS ANS G_CHK
P.C.B


RF UNIT
G601
G602
G603
G604
G605
G606
Q752
Q304
Q601
Q371
L377
L376
L302
C312
C314
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R315
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CN703
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IC753
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X501
L906
L904
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IC331
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C304
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C511
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Q753
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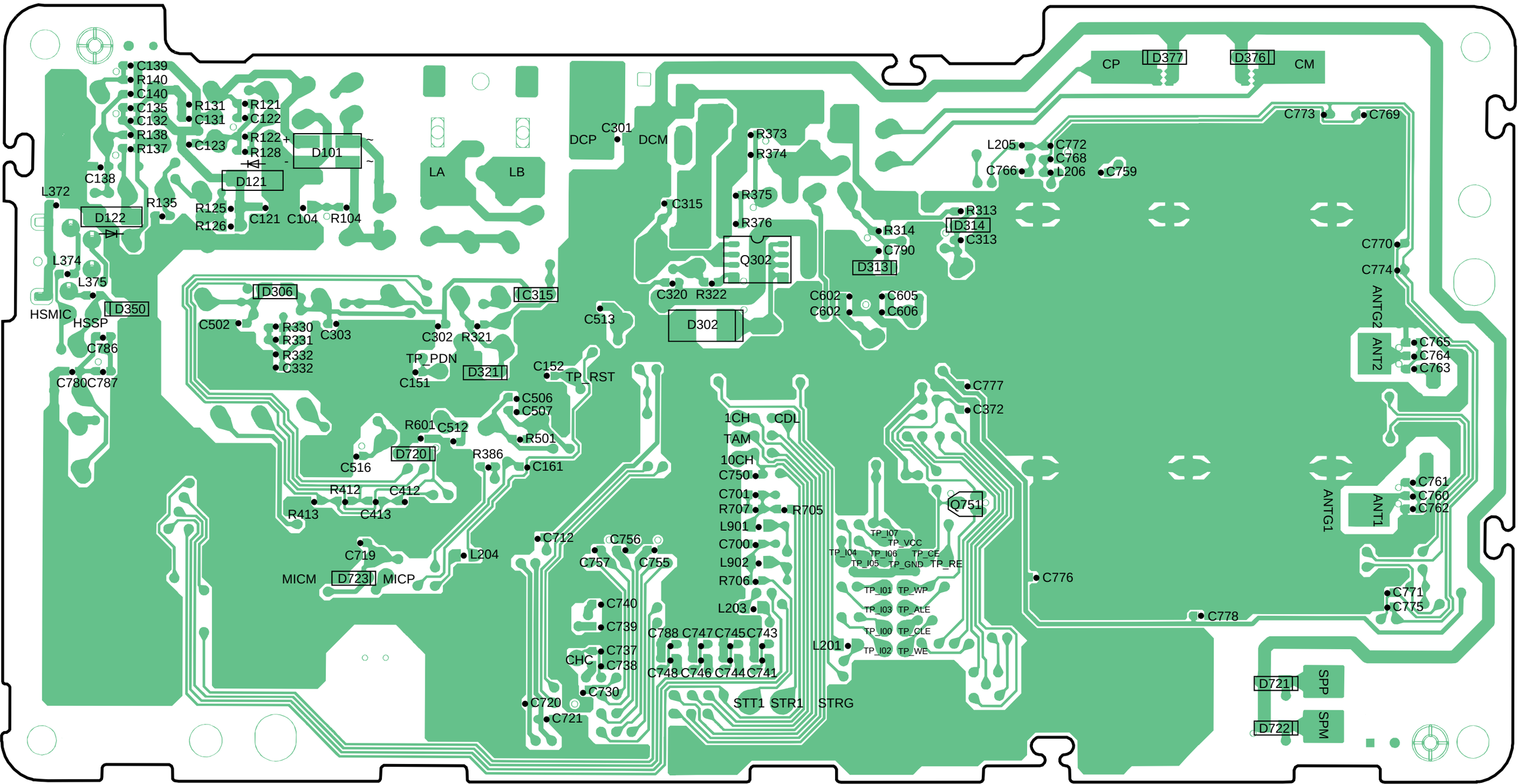
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C763
ANTG1
ANT1
C761
C760
C762
CP
D377
D376
CM
D306
C502
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R331
R332
C332
C303
C315
C302
R321
TP_PDN
C151
D321
C152
TP_RST
C506
C507
R601
C512
R501
D720
R386
C161
C516
R412
C412
R413
C413
C719
L204
MICM
D723
MICP
C712
C756
C757
C755
1CH
CDL
TAM
10CH
C750
C701
R707
R705
L901
C700
L902
R706
L203
C740
C739
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CHC
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STRG
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TP_I06
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TP_I05
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TP_RE
TP_I01
TP_WP
TP_I03
TP_ALE
TP_I00
TP_CLE
TP_I02
TP_WE
Q751
C777
C372
C776
C778
C771
C775
D721
SPP
D722
SPM

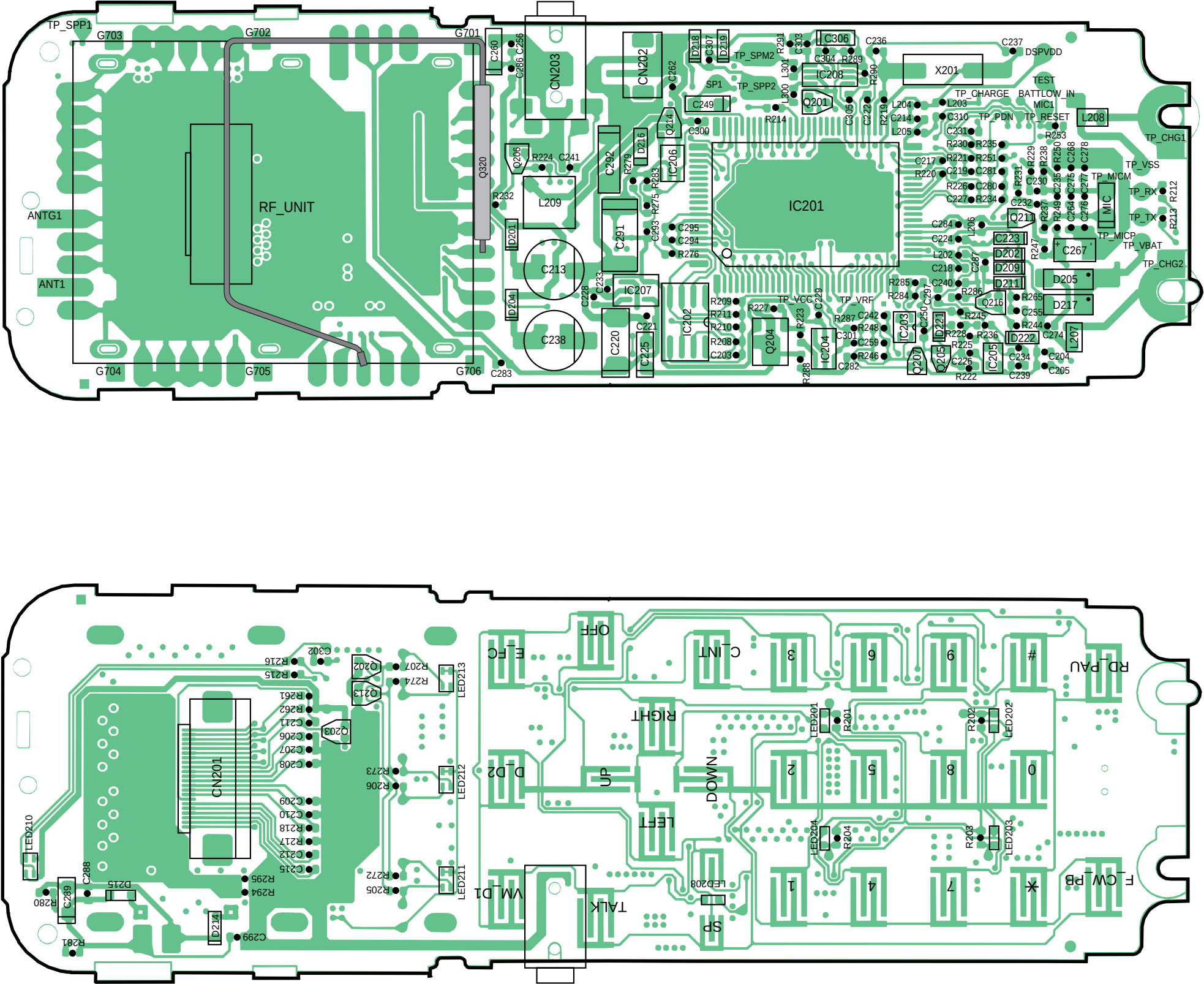
A (Operation P.C. Board)

IC753 IC754 IC752 IC751 IC501 IC755 IC331 IC302

CN703 CN702 CN101 TEL JACK CN102 DC JACK CN701

9.0V 6.1V 4.2V 4.5V 5.8V 4.1V 3.6V 2.2V 3.6V (TALK) 3.8V (Stand-by)

TALK RX TALK TX SP phone RX SP phone TX


TP_SPP1
G703
G702
G701
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G705
G706
ANTG1
ANT1
RF_UNIT
Q320
CN203
CN202
SP1
TP_SPM2
TP_SPP2
IC208
X201
Q201
DSPVDD
TEST
BATTLOW_IN
MIC1
TP_CHARGE
TP_PDN
TP_RESET
L208
TP_CHG1
TP_VSS
TP_MICM
TP_RX
TP_TX
TP_MICP
TP_VBAT
TP_CHG2
MIC
IC201
Q206
L209
Q211
C267
D205
D217
D202
D209
D211
Q216
D221
D222
L207
IC207
IC202
IC204
IC203
Q204
IC205
Q207
Q205
C213
C238
C291
C292
C220
C225
TP_VCC
TP_VRF
CN201
LED210
LED213
LED212
LED211
LED201
LED202
LED204
LED203
LED208
D215
D214
Q202
Q213
Q203
E_FC
OFF
C_INT
3
6
9
#
RD_PAU
RIGHT
UP
DOWN
LEFT
D_D2
2
5
8
0
VM_D1
TALK
SP
1
4
7
*
F_CW_PB

TALK TX
TALK RX
SP phone TX
SP phone RX

ANT1 ANTENNA
ANT2
ANTG1
G701 G705 G702
G704 G706 G703

RF_UNIT
RF_RESET
VRF1
GND
PWRDIN
TX_ADPCMIO
RX_ADPCMO
PCM_SYNC
PCM_BCLK
IRQ
S_LOW
PCONT
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
VRF2
VPWR

C320 0.01
C302 0.1

D_D2 RD_PAU C_INT UP
F_CW_PB OFF * 7 4 1 RIGHT
TALK VM_D1 0 8 5 2 DOWN
SP E_FC # 9 6 3 LEFT
TEST
DSPVDD
3.1V

LED208
R214 330
D201 D202 D204 C287 0.1
L203 C213 6.3V220
C236 C6P
X201 4.096M
C237 C6P
R219 NC
L206 0 L202 0
C223 T6.3V10 C224 0.1
C238 6.3V220 C240 NC
L204 L205
VCC
Q211
R247 390
C267 T6V22
R249 2.2K
TP_MICP
C276 NC
R263 2.2K
R237 NC
C235 NC
C264 NC
C277 K1000P
MIC
R238 NC
C268 NC
R250 2.2K
C278 NC
TP_MICM
C286 D10P
MIC1
R230 1K
C231 K0.22
SP1
HEADSET-JACK
C249 T4V22
R232 10K
C256 NC
C260 NC
HEADSET-DET
Q206
CN203
SP1
SP2
MIC2
MIC1
GND
C241 NC
R224 10K
C214 0.1
C217 0.1
C310 0.01
C219 J47P
R221 10K
R220 470K
C227 J47P
R226 12K
C284 D10P
R229 1K
C230 K0.1
R231 1K
C232 K0.1

IC201
DSP
98:EEPROM_CLK
99:EEPROM_DI
100:EEPROM_DO
30:TALK_LED_GREEN
RESET

IC208
L300
D218 15V
TP_SPP2
T6.3V10
C307 D10P
L301
D219 15V
TP_SPM2
R290 NC
C305 1.0
C306
C304 K0.1
R289 68K
R291 82K
C303 K470P
R280 18
R281 18
RECEIVER
C288 D10P
C289 T6.3V4.7
D214 15V
C299 D10P
D215 15V
TP_SPP1

KEY
LIGHTED
Q201
R201 100
R202 100
R203 100
R204 100
LED201
LED202
LED203
LED204

Q213
Q202
R272 12
R205 150
R273 12
R206 150
R274 12
R207 150
LED211
LED212
LED213
LCD BACKLIGHT
C283 NC

R209 100K
R210 100K
R211 100K
IC202
R208 NC
C203 0.1

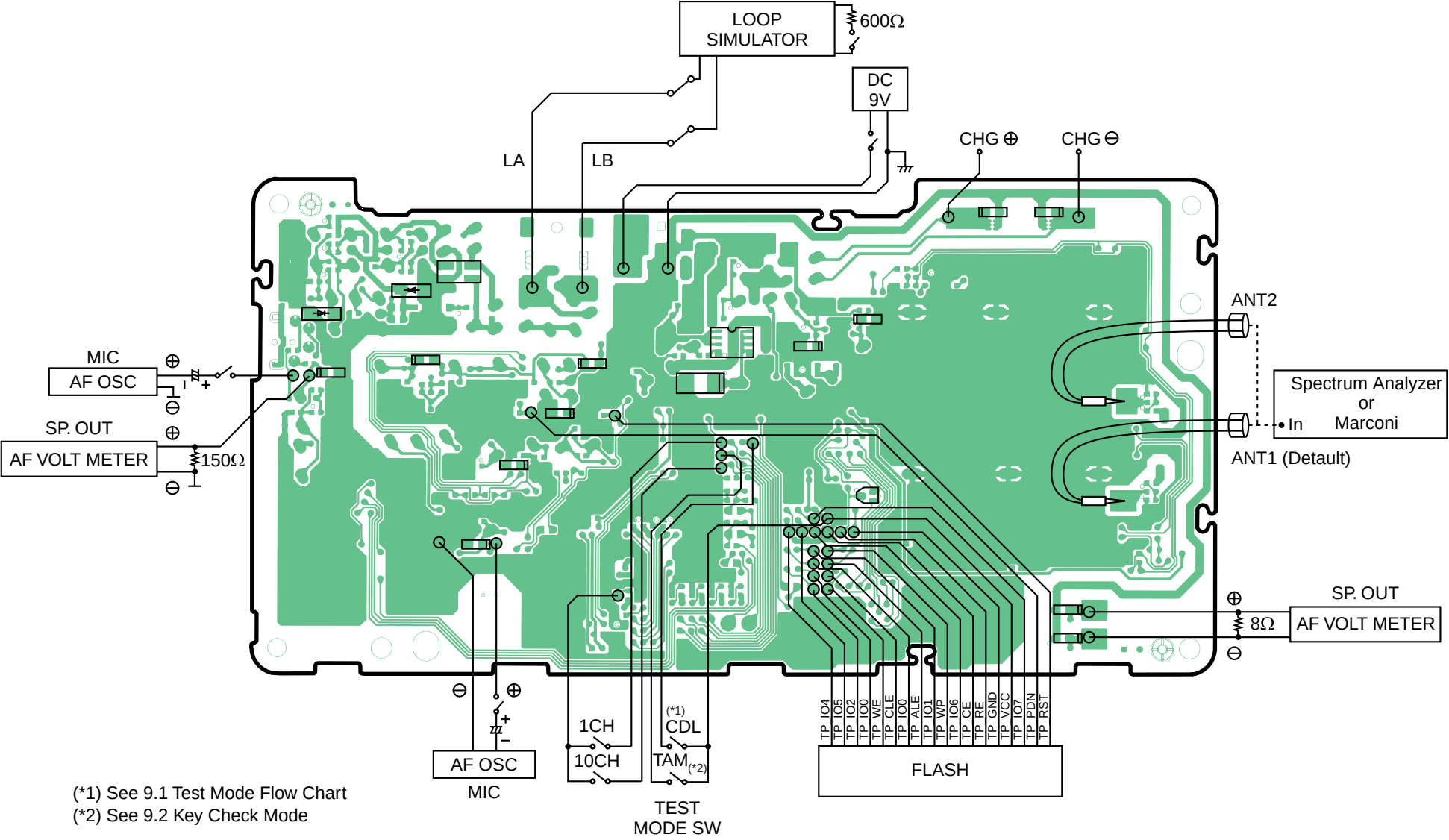
R261 NC
R262 NC
Q203

C206 K0.1
C207 K0.1
C208 K0.1
C209 K0.1
C210 K0.1
R217 430K(1%)
C211 K0.47
C212 K0.47
C215 K0.47
R218 820K(1%)
LCD
CN201
RS
RW_WR
E_RD
CSB
DB7
DB6
DB5
DB4
VDD
V4
V3
V2
V1
V0
VR
VOUT
CAP2-
CAP2+
CAP1-
CAP1+
VSS
RESETB

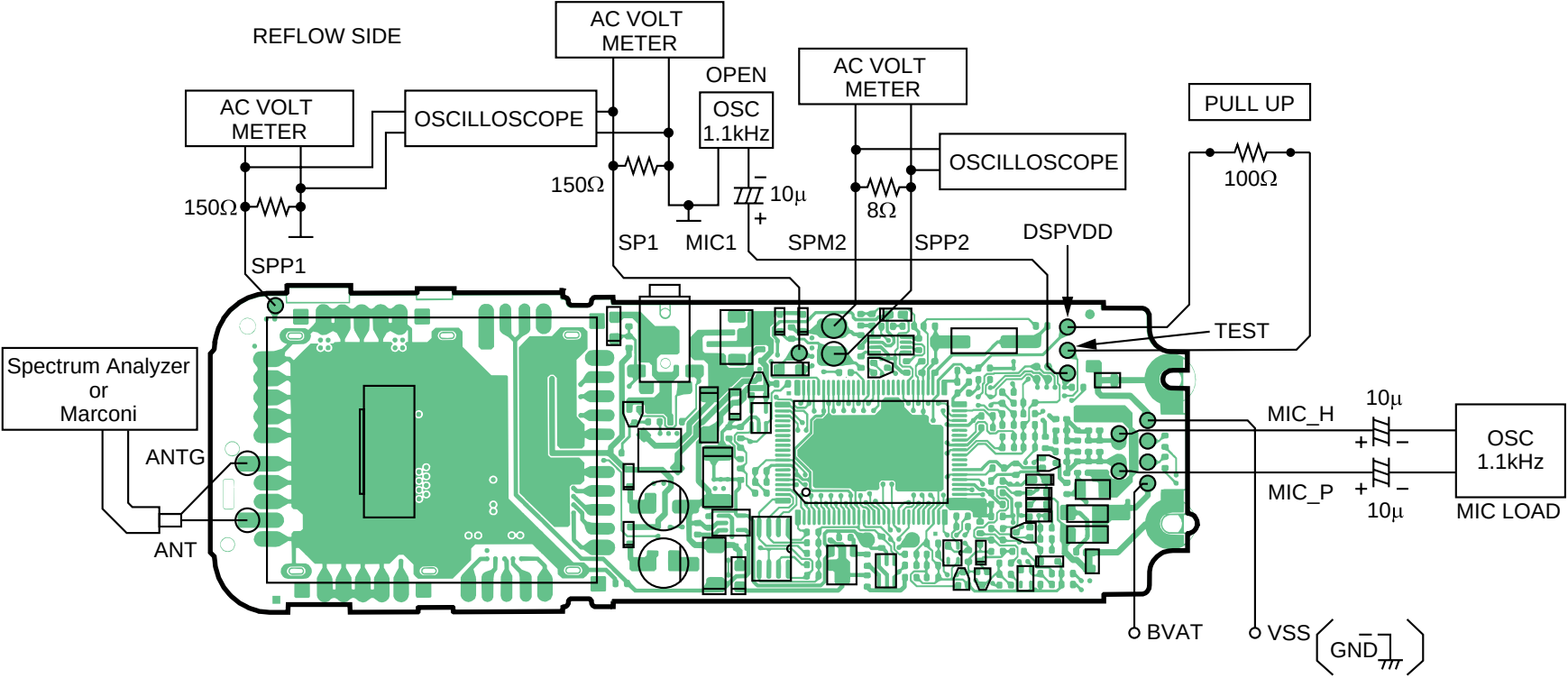
3.3V
TP_VRF
VRF
C220 T6.3V100
C221 0.1
IC207
C228 K0.01
R287 100K
C229 0.1

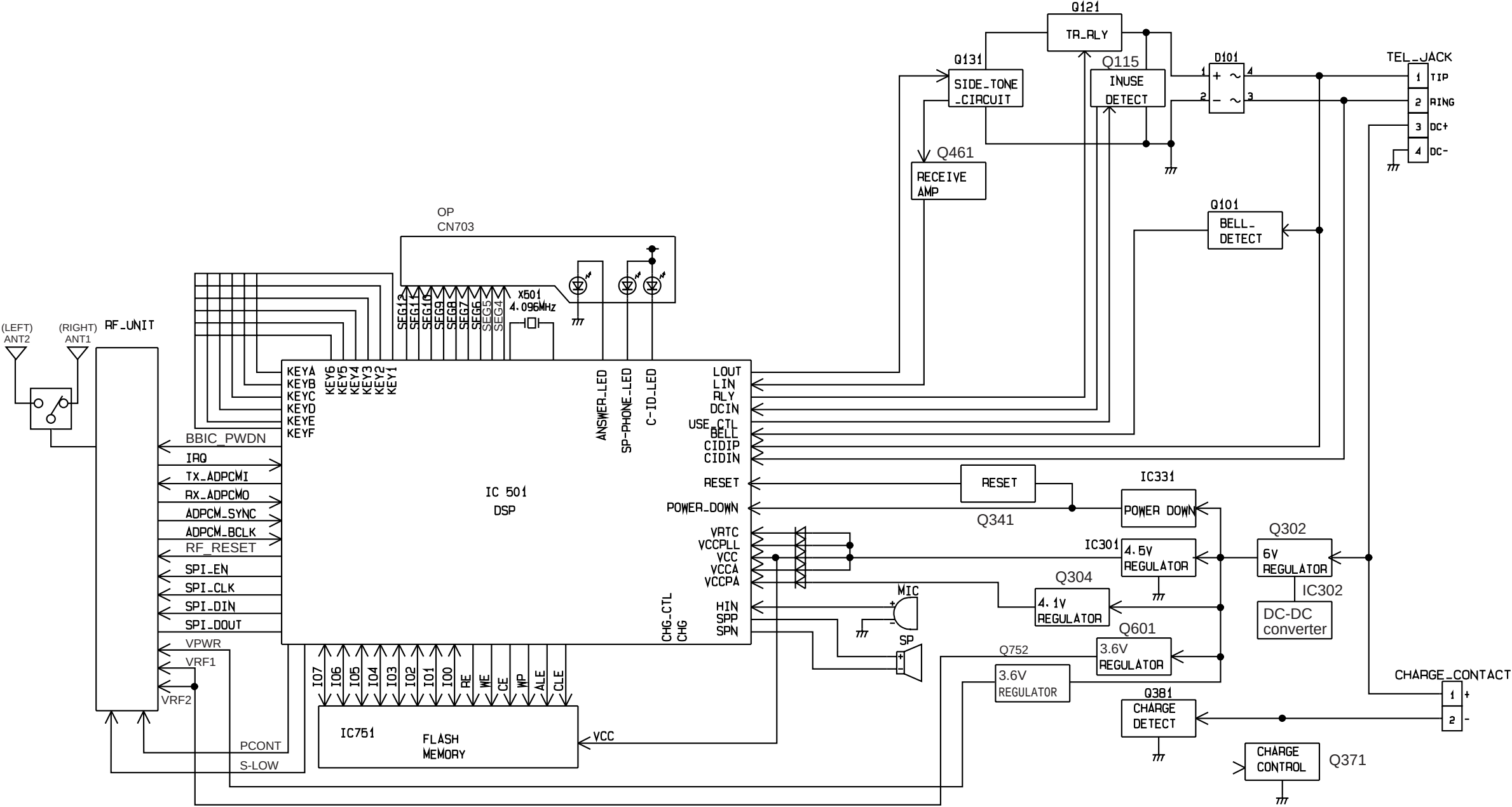
R216 330
R215 100
LED210
BATTLOW_IN
TP_RESET
R222 100
C222 0.1
C226 0.1
R235 2.2M(1%)
C234 0.1
C239 K0.1
IC205
C281 NC
C280 0.1
R234 2.2M(1%)
VCC
3.3V
TP_VCC
3.6V
Q204
R227 47K
R288 0
C225 T6.3V4.7
C233 0.1
C291 T6.3V330
C293 K1800P
R279 47K
R275 220K
R276 100K
R283 NC
C282 NC
R223 0
IC204
C285 0
C311 NC
IC206
Q214
R284 0
C300 NC
IC203
TP_VBAT
R244 100K
C255 0.1
D211 15V
C242 NC
R265 10K
D209
C250 1.0
R251 100
D217
L207 NC
TP_CHG2
CHARGE2
CHARGE1
L208 NC
TP_CHG1
CN202
BATT+
BATT-
TP_VSS
VBAT
C292 T6.3V100
C262 NC
D205
C274 6.8K
TP_CHARGE
R225 4.7K
R245 10K
Q207
CHARGE
POWERDOWN
TP_PDN
R248 39K
R246 39K
C259 NC
Q205
R228 220K
D221
Q216
R286 220K
D222
D216
L209 22uH

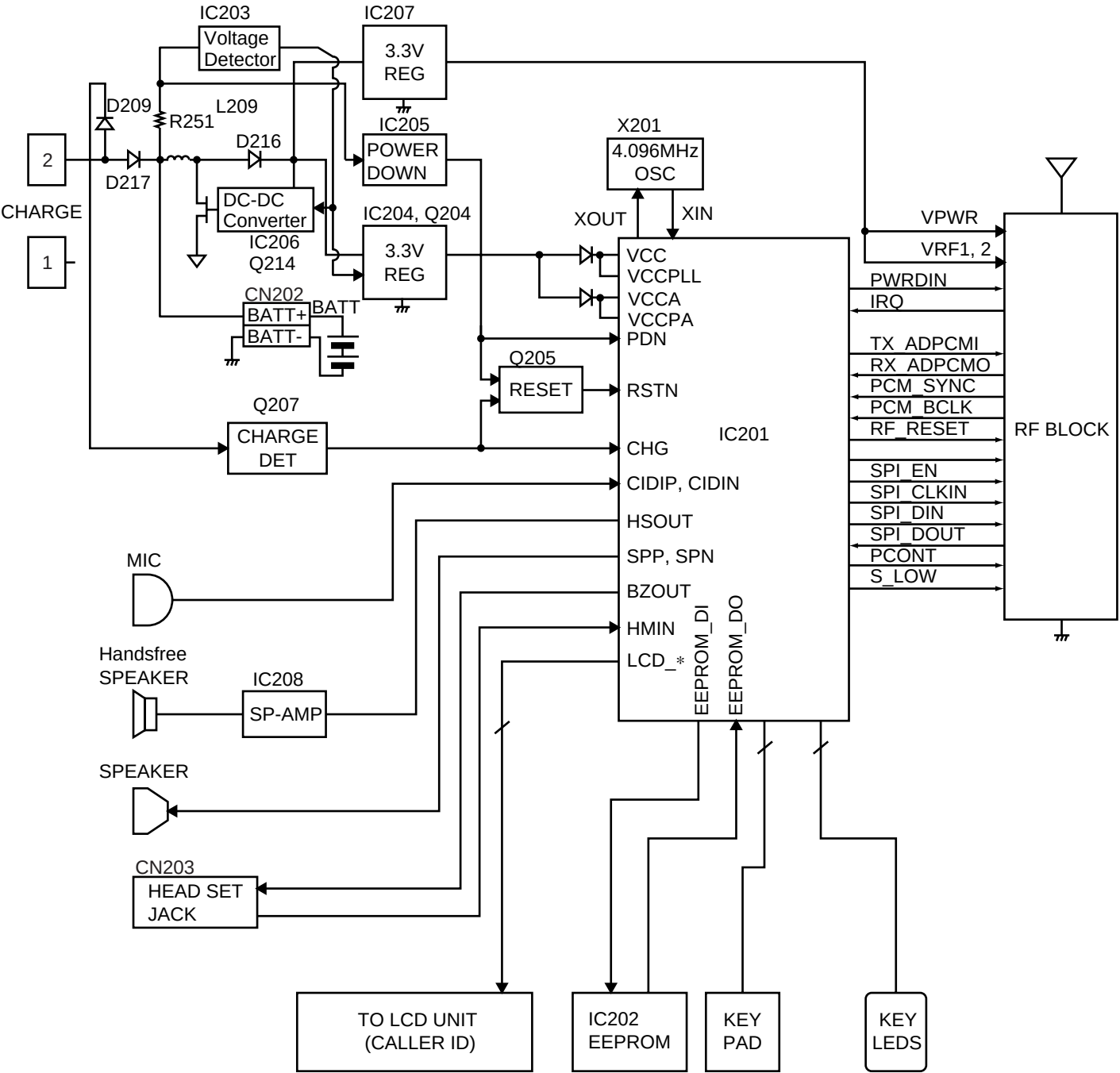
R294 NC
R295 NC
P.C.B
RF_UNIT

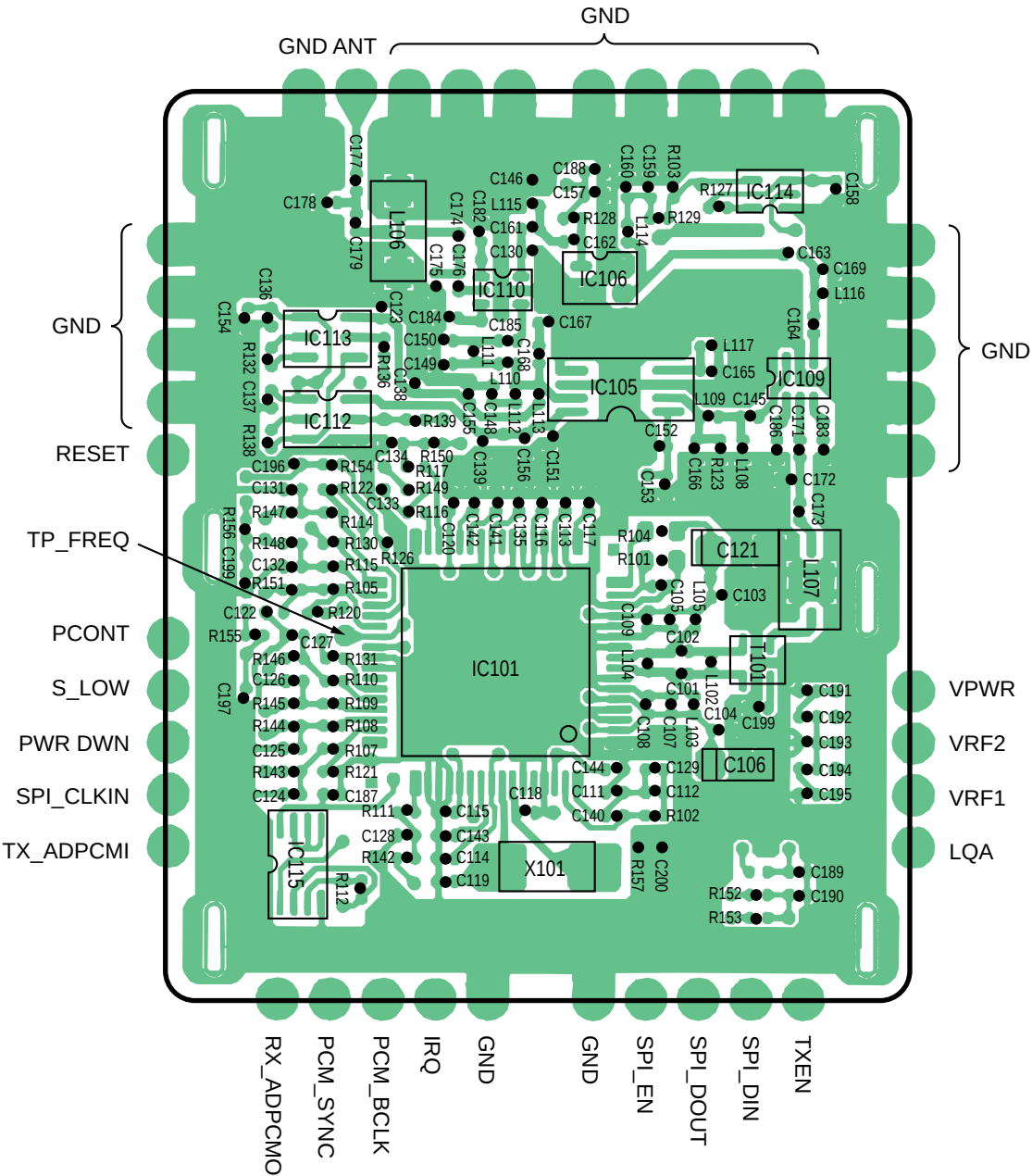


(*1) See 9.1 Test Mode Flow Chart
(*2) See 9.2 Key Check Mode


REFLOW SIDE
AC VOLT METER
OPEN
AC VOLT METER
AC VOLT METER
OSCILLOSCOPE
OSC 1.1kHz
OSCILLOSCOPE
PULL UP
150Ω
150Ω
10µ
8Ω
100Ω
SP1
MIC1
SPM2
SPP2
DSPVDD
SPP1
TEST
Spectrum Analyzer or Marconi
ANTG
ANT
MIC_H
MIC_P
10µ
10µ
OSC 1.1kHz
MIC LOAD
BVAT
VSS
GND

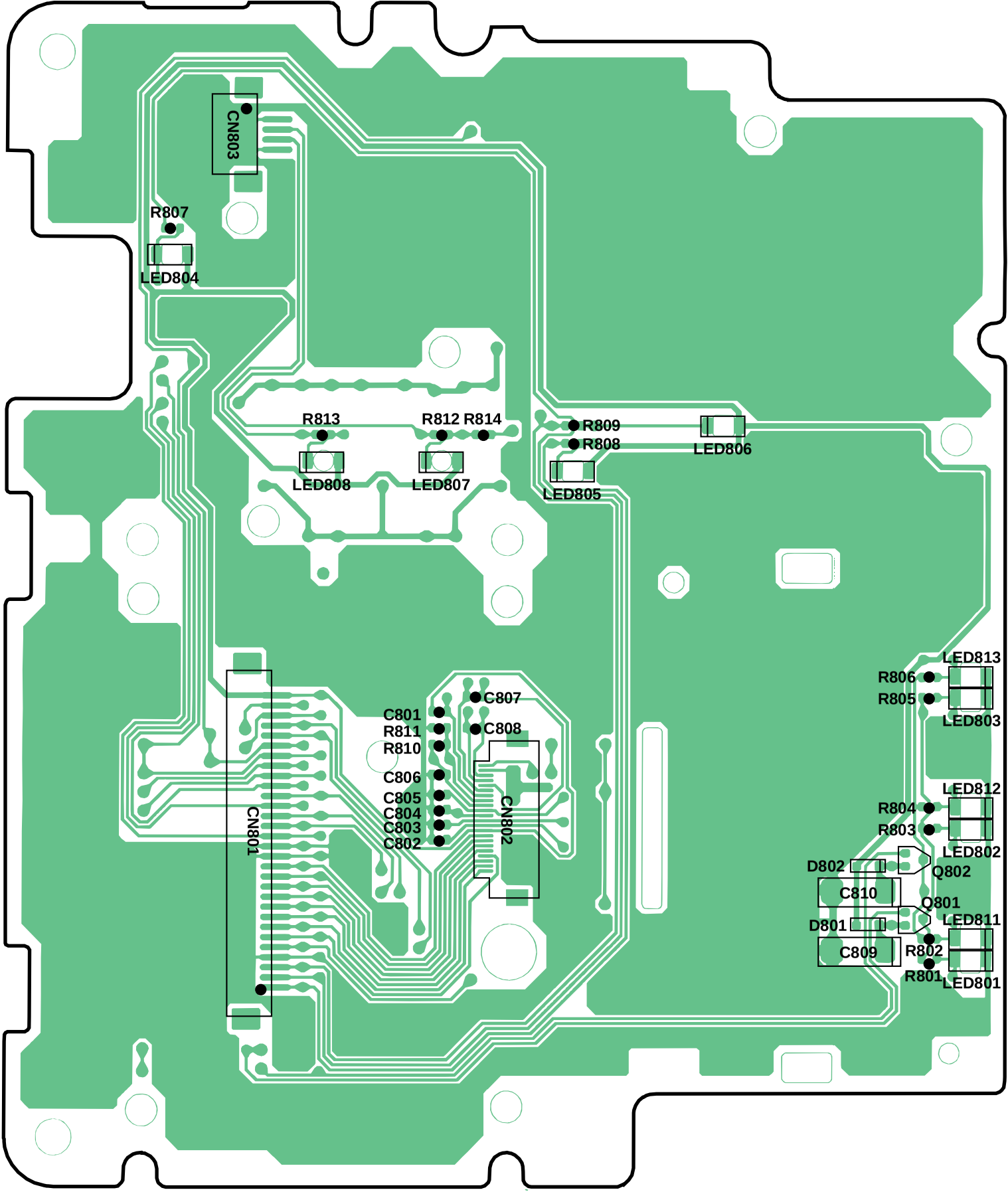

Q121
TR_RLY
Q131
SIDE_TONE
_CIRCUIT
Q115
INUSE
DETECT
D101
TEL_JACK
1 TIP
2 RING
3 DC+
4 DC-
Q461
RECEIVE
AMP
Q101
BELL_
DETECT
OP
CN703
X501
4.096MHz
SEG13
SEG11
SEG10
SEG9
SEG8
SEG7
SEG6
SEG5
SEG4
(LEFT)
ANT2
(RIGHT)
ANT1
RF_UNIT
KEYA
KEYB
KEYC
KEYD
KEYE
KEYF
KEY6
KEY5
KEY4
KEY3
KEY2
KEY1
ANSWER_LED
SP-PHONE_LED
C-ID_LED
LOUT
LIN
RLY
DCIN
USE_CTL
BELL
CIDIP
CIDIN
BBIC_PWDN
IRQ
TX_ADPCMI
RX_ADPCMO
ADPCM_SYNC
ADPCM_BCLK
RF_RESET
SPI_EN
SPI_CLK
SPI_DIN
SPI_DOUT
VPWR
VRF1
VRF2
IC 501
DSP
RESET
POWER_DOWN
VRTC
VCCPLL
VCC
VCCA
VCCPA
HIN
SPP
SPN
CHG_CTL
CHG
RESET
Q341
IC331
POWER DOWN
IC301
4.5V
REGULATOR
Q302
6V
REGULATOR
IC302
DC-DC
converter
Q304
4.1V
REGULATOR
MIC
SP
Q601
3.6V
REGULATOR
Q752
3.6V
REGULATOR
CHARGE_CONTACT
1 +
2 -
Q381
CHARGE
DETECT
CHARGE
CONTROL
Q371
IO7
IO6
IO5
IO4
IO3
IO2
IO1
IO0
RE
WE
CE
WP
ALE
CLE
IC751
FLASH
MEMORY
VCC
PCONT
S-LOW

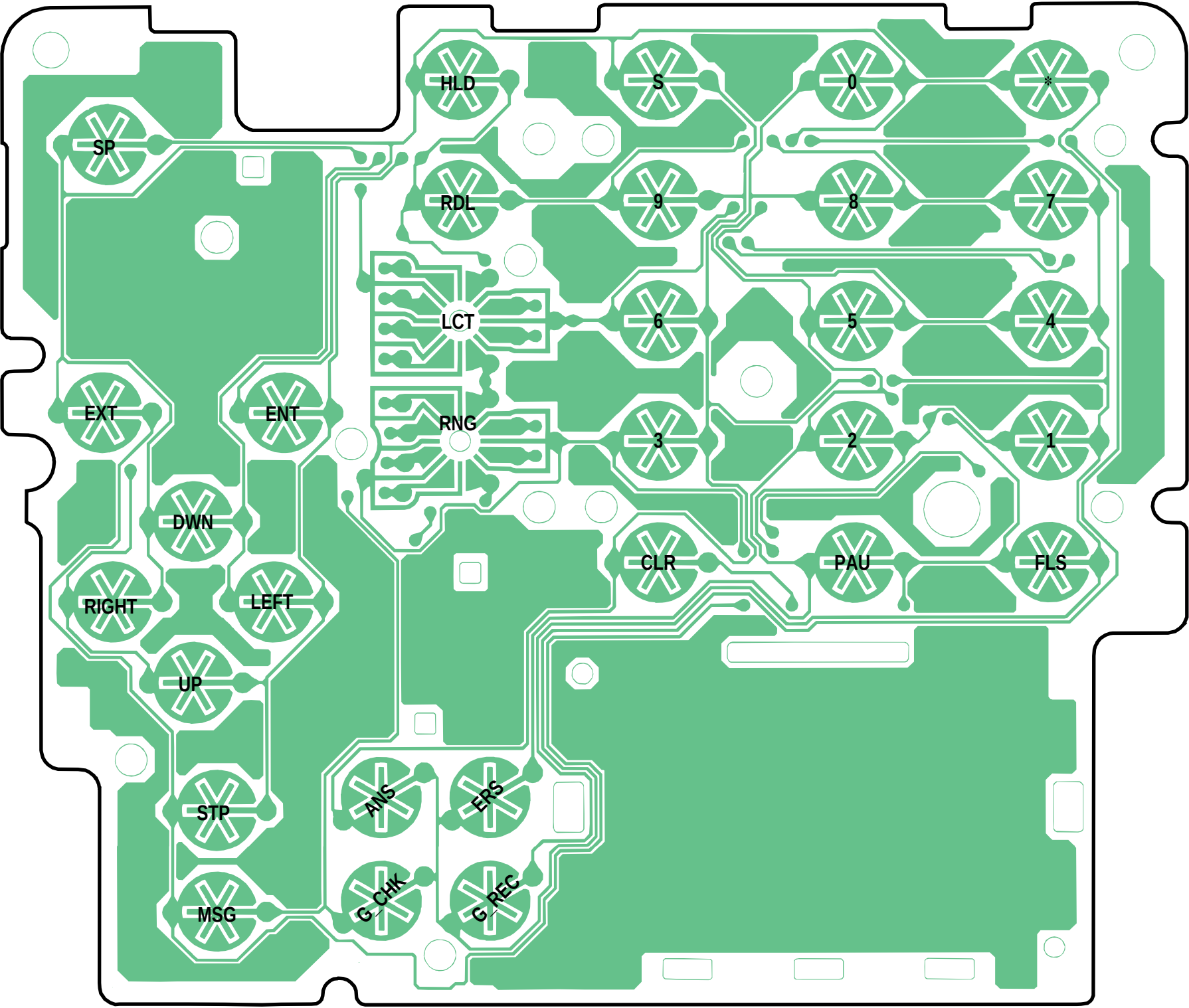

IC203
Voltage Detector
IC207
3.3V REG
D209
L209
R251
IC205
POWER DOWN
X201
4.096MHz OSC
D216
2
D217
CHARGE
1
DC-DC Converter
IC206
Q214
IC204, Q204
3.3V REG
XOUT
XIN
VPWR
VRF1, 2
CN202
BATT+
BATT-
BATT
VCC
VCCPLL
VCCA
VCCPA
PDN
PWRDIN
IRQ
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
RF_RESET
Q205
RESET
RSTN
Q207
CHARGE DET
IC201
CHG
RF BLOCK
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
PCONT
S_LOW
CIDIP, CIDIN
HSOUT
MIC
SPP, SPN
BZOUT
HMIN
LCD_*
EEPROM_DI
EEPROM_DO
Handsfree SPEAKER
IC208
SP-AMP
SPEAKER
CN203
HEAD SET JACK
TO LCD UNIT (CALLER ID)
IC202 EEPROM
KEY PAD
KEY LEDS


GND
GND ANT
GND
GND
RESET
TP_FREQ
PCONT
S_LOW
PWR DWN
SPI_CLKIN
TX_ADPCMI
VPWR
VRF2
VRF1
LQA
RX_ADPCMO
PCM_SYNC
PCM_BCLK
IRQ
GND
GND
SPI_EN
SPI_DOUT
SPI_DIN
TXEN
IC101
IC105
IC106
IC107
IC109
IC110
IC112
IC113
IC114
IC115
L106
C121
C106
X101

ANT
LQA
TXEN
R152 0
R153 0
C189 C1P
C190 C1P
3.6V
IC106
IC114
IC110
IC109
IC105
IC113
IC112
IC101
IC115
Balun T101
R128 33K
R129 180
R127 3.3K
R103 10K
C188 K1000P
C130 NC
L114 3.9nH
C158 K0.1
C107 D10P
L103 22nH
C104 K0.1
C106 22
C129 K0.1
C112 K0.1
R102 2.2K
C144 K0.01
C140 K0.01
C111 K0.01
C114 D10P
C115 K0.1
C143 K0.1
R120 100K
0.9V
R157 100
C118 D10P
C200 C5P
X101 24MHz
C119 J22P
C187 NC
R112 0
VRF1
GND
C195 C1P
Normal 0V
PWRDIN
IRQ
TX_ADPCMI
RX_ADPCMO
PCM_SYNC
PCM_BCLK
SPI_EN
SPI_CLKIN
SPI_DIN
SPI_DOUT
VRF2
RESET
S_LOW
PCONT
VPWR
R105 100
R151 0
C122 C1P
R111 100
R142 0
C128 C1P
R107 100
R143 0
C124 C1P
R108 100
R144 0
C125 C1P
R109 100
R145 0
C126 K1000P
R110 100
R146 0
C127 C1P
R114 100
R147 0
C131 C1P
R115 100
R148 0
C132 C1P
R116 100
R149 0
C133 C1P
R117 100
R150 0
C134 C1P
R131 100
R130 100
R121 10K
R126 100K
R122 100K
TPFREQ2
TPFREQ1
C194 C1P
C193 C1P
C192 C1P
C191 C1P
R154 0
R155 0
R156 0
C196 C1P
C197 C1P
C198 C1P
3.6V
TX-Power High 4.2V Low 0V
3.6V (TALK)
3.8V (Stand-by)
TX pow
RX pow
P.C.B
U.Shield
Shield

LQA R152 0
ANT
TXEN R153 0
C189 C1P
C190 C1P
3.6V
C104 K0.1
C106 22
IC114
Tr1C Tr1E Tr2B Tr2C Tr2E
R127 3.3K
C158 K0.1
R129 180
IC106
R128 33K
R103 100
C188 K1000P
C130 NC
C146 NC
L115 1.5nH
C182 D10P
C157 D10P
C161 C3P
C162 D10P
L114 3.9nH
C160 D10P
C159 D10P
C169 C1.5P
L116 2.7nH
C163 D10P
C164 D10P
C183 D10P
C107 D10P
L103 22nH
3.6V
Balun T101
C101 C1P
L102 4.7nH
L104 NC
C102 C1P
C108 D10P
C199 NC
L105 22nH
C105 D10P
C109 D10P
C171 C173 L107
C186 D10P
C179 L106
C177 D10P
C178 C0.5P
C176 C3P
C174 D10P
C175 C0.5P
C184 D10P
IC110
C185 D10P
L111 2.7nH
L110 2.7nH
C150 NC
C149 C1P
L117 4.7nH
C165 C0.5P
L109 1.8nH
L108 1.2nH
C145 D10P
IC109
IC105
VGG3 VGG2 GND GND RFOUT RFIN VDD2 VDD1
C168 NC
L112 1nH
C167 NC
C148 C1P
L113 8.2nH
C156 J100P
C151 D10P
C152 NC
C166 NC
R123 330
C153 K0.1
C139 NC
R136 18K
R139 18K
C138 NC
C123 C1P
C155 D10P
IC113
IC112
R132 0
R138 680
C136 C1P
C137 C1P
C154 K0.1
TX pow
RX pow
TX-Power
High 4.2V
Low 0V
3.6V (TALK)
3.8V (Stand-by)
P.C.B
U.Shield
Shield
Shield
IC101
SUBVCO VDDRFVCO GNDRFVCO GNDRFPA VDDRFPA GNDRFPA GNDRFPO RFION RFIOP GNDRFIO GNDRFSUB ESDRING VDDRFLNA GNDPABIAS RVIAS ROCS
C129 K0.1
C112 K0.1
R102 2.2K
C140 K0.01
C111 K0.01
C144 K0.01
C114 D10P
C115 K0.1
C143 K0.1
R120 100K
PLLVR PLLRC VDDSYN GNDSYN TP8 GNDXO XTALO XTALIN VDDXO BATMON LGA VDDDMD GNDDMD SUBDMD TESTEN IRQ
0.9V
R157 22
C118 D10P
C200 D10P NC
X101 24MHz
C119 J22P
0.9V
C110 J100P
R101 15K(1%)
R104 220K(1%)
C117 J68P
COSC GNDBIAS VDDBIAS GNDMX VDDMX VDDAF GNDAF TP3 VDDSCFAD GNDSCFAD VREFADP VREFADN SOFT_DIG_VDD SPIDOUT SPIDIN SOFT_DIG_GND
C141 K0.1
C142 K0.1
C113 K0.1
C116 NC
C135 NC
C120 K0.1
C103 K0.1
C121 22
R131 100
R130 100
TP7 TXADPCM RXADPCM PCMSYNC PCMBCLK RXENOUT TP6 SUBPAD GNDPAD VDDPAD TP5 PWRDWN TP4 SPIENB SPICLK TXENOUT
TPFREQ2
TPFREQ1
R121 10K
R126 100K
R122 100K
C187 NC
IC115
IN2_2 GND IN2_1 OUT2 OUT1 IN1_2 VCC IN1_1
R112 0
3.6V
C195 C1P
VRF1
GND
Normal 0V
R105 100
R151 0
PWRDIN
C122 C1P
R111 100
R142 0
IRQ
C128 C1P
R107 100
R143 0
TX_ADPCMI
C124 C1P
R108 100
R144 0
RX_ADPCMO
C125 C1P
R109 100
R145 0
PCM_SYNC
C126 K1000P
R110 100
R146 0
PCM_BCLK
C127 C1P
R114 100
R147 0
SPI_EN
C131 C1P
R115 100
R148 0
SPI_CLKIN
C132 C1P
R116 100
R149 0
SPI_DIN
C133 C1P
R117 100
R150 0
SPI_DOUT
C134 C1P
3.6V
C193 C1P
C194 C1P
C192 C1P
VRF2
R154 0
RESET
C196 C1P
R155 0
S_LOW
C197 C1P
PCONT
C198 C1P
R156 0
VPWR
C191 C1P


CN803
R807
LED804
R813
R812 R814
R809
R808
LED806
LED808
LED807
LED805
LED813
R806
R805
LED803
C807
C801
C808
R811
R810
C806
C805
C804
C803
C802
CN802
CN801
LED812
R804
R803
LED802
D802
Q802
C810
Q801
D801
LED811
C809
R802
R801
LED801


HLD
S
0
*
SP
RDL
9
8
7
LCT
6
5
4
EXT
ENT
RNG
3
2
1
DWN
CLR
PAU
FLS
RIGHT
LEFT
UP
STP
ANS
ERS
MSG
G_CHK
G_REC